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SOAP and SANITARY CHEMICALS

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FRANK J. REILLY, Editor

Associate Editors
ELEONORE KANAR
JOHN VOLLMUTH

Business Manager
THOMAS MORGAN

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AS THE EDITOR SEES IT

COMMENTING on the general decline in prices which has characterized most markets since the turn of the year, a well-known financier lays this to the wide increases in production since 1947. These increases, in fact, have brought production figures in America to their highest levels in history, he notes, and goes on to state that shortages for the most part have become a memory. Supply and demand have come more closely into balance, and prices have ceased their upward spiral.

This sequence of events is exactly as predicted by experienced economists, and echoed right here during the days of post-war price controls. The price-control boys in Washington and elsewhere screamed aloud against removal of ceilings and when prices shot upward immediately following, they howled we-told-you-so. But it was that upsurge in prices which brought production out of the doldrums, which supplied the incentive to push production and eventually overcome shortages. Had controls remained, retarded production, scarcities and black markets likewise would have remained.

With the lush days apparently past and over, all industry of necessity is adjusting itself closer to bedrock conditions,—to lower prices, to sharpened competition. In the fields of soaps, detergents and allied chemical specialty products, this becomes more apparent with each passing day. That cancellation in your mail this morning was a harbinger of this return to normal. So, what are the controlled-economy boys going to think up to scream about now?

WHEN we criticized the school soap program of the New York City Board of Education last month based on what we thought was excessive dilution of liquid soap supplied to the children in some schools, we made an error of fact which gave a completely wrong impression. Harold D. Hynds, Superintendent of Plant Operation and Maintenance of the N. Y. Board of Education caught us off base and pointed out the error. We apologized privately to Mr. Hynds and are herewith doing so publicly. He stated that his schools are using a ten per cent soap solution with lather dispensing valves. This conforms to our own recommendations in the editorial in question. Rereading his instructions for dilution to the individual schools, we find that they call for one part of water to be added to two parts of 15% soap. So, for the past month we have been eating our own harsh words aimed at the New York school soap program.

INTERNATIONAL experimenting in the fats and oils markets ended early this month with a series of decisions by the Office of International Trade of the Dept. of Commerce, first to remove export license requirements on soaps, inedible tallow and greases, and finally on edibles as well. Licenses will still be necessary on exports to non-Marshall Plan countries, but for most practical purposes international rationing of fats and oils has ended.

The action of the OIT, and the concurrence of the Department of Agriculture and the International Emergency Food Committee in this action, certainly seemed logical in the face of the current fat and oil supply situation. The purpose of the original controls was to divide scarce commodities equitably, and with the days of fat and oil scarcities behind us, controls were obviously no longer necessary.

We hazard the guess that no one will greatly mourn the passing of government mixing in the fat market. During the period of government planning, price swings up and down, have been the sharpest in history.

THAT an examination of all shampoo advertising claims had been under way by the Federal Trade Commission since the filing of the FTC complaint against Fitch some time ago has been quite generally known in Washington. Word now comes out that more than a hundred shampoos, advertised via radio and press, had been checked up and that a dozen or so manufacturers are reported to put forth what FTC considers false or misleading claims for their products. From this angle, before the Fitch case is ended all manufacturers of shampoos may find themselves involved in one way or another.

That FTC has indicated for several years past that it intends to move in on shampoo claims in a broad way, has been quite apparent. Even though a manufacturer may feel that his claims are air-tight and can be substantiated wholly by scientific fact, we feel nevertheless that a review of them by a disinterested outside expert might lessen future difficulties. This same suggestion was made here some six or eight months ago, and we feel that it is timely to bring it up again. With no thought or bearing on the Fitch case, we believe that some shampoo people might well check over their own claims at this time.

SOME large buyers of glycerine are grumbling in their beards over the continued high price. Having seen tallow hit the toboggan, their wonder regarding a refined glycerine market still close to forty cents is not surprising. Soap prices have followed tallow down, they point out. But why not glycerine?

In our experience, the glycerine market is always a matter of independent supply and demand. In spite of lower fat prices and new synthetic production, demand for glycerine has continued active, widely diversified, and sufficient to absorb available production. Such a combination will usually support any market. But, signs of weakness appear on the horizon, and with the accumulation of any sizable stocks, which could be not too far off, a substantial price decline is likely.

Large users make no bones of accusing glycerine refiners bluntly of getting "all the traffic will bear." If there is evidence to the contrary, they say, the refiners have not taken the trouble to point it out. Though the basic glycerine long-range position continues relatively strong in spite of new synthetic competition, and buyers must still depend on current sources for some years to come, the point that some word of explanation might have helped to engender a better feeling appears to be well taken.

AIMED at a broad cut in various and sundry excise and luxury taxes, Representative Joseph Martin of Massachusetts, former Speaker of the House, has introduced a bill into Congress. Although this is slanted mostly in the direction of luggage, fur, cosmetic and similar taxes, the thought of coconut oil and its long-outmoded three-cent excise tax comes strongly to mind. By all means, the high tax on cosmetics should be slashed deeply or eliminated. Under present sales conditions, it defeats its own purpose and penalizes unjustly every user and manufacturer. In the case of coconut oil, the old excise tax, if possible is even less justified, except perhaps on the basis that the government likewise needs the money. But governments always need more money,—always more, never less,—and this is still not a justification for punitive taxation.

To any bill aimed to cut excise taxes, an addition covering coconut oil will undoubtedly be made at the proper time in its course through legislative channels. The complete absurdity of this three-cent penalty on this important soap oil, the entire purpose for which has long since become history, needs no explanation here. Although the hope is sincere that this tax might be eliminated, we question its accomplishment, —or any aid on cosmetics either,—in this particular bill introduced by a leading Republican under the present Washington political set-up. But this, nevertheless, need stop nobody from once again filing with his congressman a strong letter urging such taxes be cut sharply or eliminated. Right now is the time to write. Today!

AASGP Meets; Elects Luckman

Five new board members elected ... Potash and bulk industrial soap groups to be reestablished ... Brannan banquet speaker

CHARLES Luckman, president of Lever Brothers Co., Cambridge, Mass., was elected president of the Association of American Soap & Glycerine Producers at the 22nd annual convention of the organization held at the Hotel Commodore, New York, Jan. 26 and 27, and attracting an attendance of over 600 manufacturers of soaps, cleaning compounds and synthetic detergents.

A number of new members were added to the board of directors of the Association, the group including Neil H. McElroy, president of Procter & Gamble Co., Cincinnati; J. L. Brenn of Huntington Laboratories, Huntington, Ind.; H. Dock of M. Werk Co., Cincinnati; B. F. Flynn, Pacific Soap Co., Los Angeles, and E. B. Hurlburt, J. B. Williams Co., Glastonbury, Conn.

An important action was taken by the board in its decision to reestablish two sections in the association,—a potash soap specialty group and a bulk industrial soap group. The board's decision was announced to the potash soap group by Russell H. Young of Davies-Young Soap Co., Dayton, O., at a meeting of potash soap manufacturers the morning of Jan. 27. A committee of eight members representing potash soap manufacturers was appointed, headed by J. L. Brenn, to work out a program for reactivating the potash soap section of the association. Other members of Mr. Brenn's committee include Melvin Fuld of Fuld Brothers, Inc., Baltimore; Leonard J. Oppenheimer, West Disinfecting Co., Long Island City; Albert Selig, Selig Co., Atlanta; Allen G. Peck, Peck's Products Co., St. Louis; Gerald Murphy, Murphy-Phoenix Oil Co., Cleveland; William Eddy, Rochester Germicide Co., Rochester, N. Y., and Paul Mayberry, R. R. Street Co., Chicago.

In addressing the potash soap group, Roy Peet, manager of the AASGP, emphasized that whatever former differences may have existed, it is the purpose of the association today to represent the entire industry as completely and equitably as possible. The potash soap group will be given ample latitude in acting on matters of exclusive concern to potash soap specialty manufacturers, within the limits of the by-laws of the association. He pointed out that of the present membership of the association more than half manufacture potash soaps, and that a substantial number of board members represent firms at least a part of whose production consists of potash soaps. He expressed his belief that potash soap manufacturers will be adequately represented on the board of directors of the parent association and that problems of this particular segment of the industry will receive sympathetic consideration by the board.

At a subsequent meeting of Mr. Brenn's committee the suggestion

Below: left to right and top to bottom: Charles Luckman, president of Lever Brothers Co., Cambridge, Mass., newly elected AASGP president; Neil H. McElroy, president of Procter & Gamble Co., Cincinnati, who was elected vice-president of AASGP for the mid-west and George A. Wrisley, vice-president of Allen B. Wrisley Co., Chicago, retiring president. V. Levinson, general manager of J. Eavenson & Sons, Camden, N. J.; Carter D. Poland, president, Poland Soap Works, Anniston, Ala.; Mr. Wrisley and Roy W. Peet, manager of the Soap Association.

NEIL H. McELROY, vice-president

J. L. BRENN, director

H. DOCK, director

E. B. HURLBURT, director

New Officer and Directors Of the AASGP

B. F. FLYNN, director

was offered to future nominating committees of the parent association that the chairman of the Potash Soap Section be one of the nominees for membership on the AASGP board. The committee plans to present a program for future activities of the section at the next meeting of the board, to be held in Chicago, Mar. 24.

Plans for the future activities of the bulk industrial soap group and its future organizational form are now in the hands of the board of the AASGP. Formerly an independent group within the association, the bulk industrial soap division last September requested the board of directors of the AASGP to discontinue its activities as a separate group and to accept it as a division of AASGP. A program of activities and its organization were submitted and are expected to be decided upon at the March meeting of the board of the AASGP.

The bulk industrial soap committee includes among its members D. M. Flick of Armour & Co., Chicago; E. H. Little, Colgate-Palmolive-Peet Co., Jersey City, N. J.; L. J. Evans of Iowa Soap Co., Burlington; Charles Luckman of Lever Brothers Co., Cambridge, Mass. and Walter F. Straub, Antiseptol Co., Chicago.

THE meeting opened Jan. 26 with the address of welcome and review of the year by George A. Wrisley of Allen B. Wrisley Co., Chicago, retiring president of the Association of American Soap & Glycerine Producers. He paid tribute to James Reilly of Colgate-Palmolive-Peet Co., Jersey City, N. J., and J. O. Brownell of Lever Brothers Co., Cambridge, Mass., chairman and vice-chairman, respectively, of the convention committee. Mr. Wrisley also mentioned in his review of the year's activities the election of Roy W. Peet as association manager and Malcolm Miller as assistant manager; the fact that the AASGP now has 189 members; a change in the by-laws which entitles each member to one vote on all questions; discontinuation of the Purchase Information Service; continuation of the "Cleanliness Program" on a different basis from that recommended at the last convention and with a budget of $30,000. Mr. Wrisley also mentioned that during 1948 the Fat Salvage Campaign was discontinued after operating for six years and producing a billion pounds of waste fats. An enlarged research activity to expand the market for glycerine with an expenditure of $50,000 in 1949, plus $60,000 to be spent on glycerine advertising and another $15,000 to be used for booklets or literature in con-

nection with the glycerine advertising were announced by Mr. Wrisley.

The total AASGP budget for 1949 will amount to $435,000, of which $228,000 is for soap and $207,000 is for glycerine. Last year the budget was $332,000, of which $215,000 was for soap and $117,000 for glycerine.

Mr. Wrisley concluded by stating that in the coming year "we are going to get back to normal competition, with a minimum of government regulation, we hope, where we will have competition for better products—competition for lower prices—competition for more effective selling methods."

The next speaker, Roy W. Peet, manager of the association, in his address mentioned that when the industry faces a particularly difficult problem, which is common to all, the association can serve in a spectacular manner. Today, he stated, problems have again become normal competitive problems and no emergency is facing the industry. "We do have certain regular continuing association services or activities which are designed to be helpful to the membership as a whole," Mr. Peet pointed out. He then went on to enumerate these services in detail. They include: Sales census, legislative activities, labor relations, cleanliness education and publicity, glycerine research and publicity, Washington representation, *Digest*, statistical services, convention. Mr. Peet named the persons responsible for each of these activities, as well as the other members of the association's office staff.

Small Soaper Not Endangered

A. D. H. Kaplan, Brookings Institution, Washington, presented the first paper of the Wednesday session, "The Soap Industry in the Business Perspective." According to Mr. Kaplan, the often viewed opinion that small business would be squeezed out, so to speak, in favor of stronger neighbors is shown to be untrue in examining the small business records of the past half century. The number of small firms has kept pace with the rise in population.

"The hope of the small operator lies not only in the opportunity to find a niche for himself among the great variety of requirements and processes which the soap industry embraces. It lies in the fact that industry is destined to be catering to an expanding, rather than a declining market," Mr. Kaplan concluded.

The important part played by soap in maintaining health was discussed by Admiral Ross T. McIntire, Administrator, National Red Cross Blood Program, in his luncheon address "Health and Cleanliness."

Soap Sales Up 166% Since 1942

DOLLAR soap sales have increased steadily since 1942, increasing 166 per cent from 1942 to 1948. In

Speakers on the various panels include, left to right, top: Charles E. Lund of the fats and oils branch, O.I.T., Dept. of Commerce; George Prichard, Production and Marketing Administration, U. S. Dept. of Agriculture; Kenneth Mainland, Economic Cooperation Administration; Russel Kifer, Officer of Foreign Agricultural Relations, U. S. D. A. and D. M. Flick, vice-president of Armour & Co., Chicago, who presided.
Center photograph: Gordon Fulton, president, Beach Soap Co., Lawrence, Mass., who presided at the bulk soap panel and H. C. Borghetty, General Dyestuff Corp., New York; E. A. Leonard, Alexander Smith Carpet Co., Yonkers and Ralph Smith, New Jersey Laundry-owners' Assn.
Bottom: J. C. Harris, Monsanto Chemical Co., Dayton O.; H. E. Bramston-Cook, Oronite Chemical Co.; Lawrence H. Flett, National Aniline Division, Allied Chemical & Dye Corp.; Lee D. Callans, Antara Products, Division of General Aniline and Film Corp., all of New York; and Nils S. Dahl, John T. Stanley Co., New York who presided.

that same period, the tonnage sales of soap have increased 22 per cent. This and allied data on the comparative sales and stocks of soaps and other grocery store commodities were presented by Philip Stomberg, A. C. Neilson & Company, New York, in his paper "Grocery Store Trends — Soap Department vs Total Store."

The effects of promotional activities to increase sales were reviewed and the most obvious and direct conclusion drawn on the basis of the surveys is, "Don't promote a product unless it is really good." Additional points for consideration include (1) sales gains of new products last only if the product is of top quality at the price, (2) continuous promotions of the same product produce smaller results, (3) sales gains on old established items are usually temporary, and (4) since promotion results vary widely, a detailed and individual analysis is necessary pending a promotion campaign.

"Consumer Purchases of Soap Related to Influence of Advertising and Sales Promotion," by Sam Barton, Industrial Survey Company, Inc., included an analysis of the values and effects of advertising. Mr. Barton supplemented his paper with charts illustrating sales before, during and after promotion campaigns; the type of people reached by the various means of advertising, radio, contests, magazines, newspapers, etc., and the value of new customers acquired during a sales campaign.

Arthur B. Dougall, Stewart-Dougall Associates, New York, in his paper, "The Use of Market Research to Expand Industrial Soap Sales," pointed out that although the soap industry has made considerable application of market research to analyze consumer markets, it has not taken full advantage of the program to solve its industrial problems.

Technical qualities desired, prices, information on competitive products which may be used for the same purposes, advertising and distribution are some of the factors requiring investigation in proper planning, which factors should be considered in a market research program. Examples of work done to date were cited by Mr. Dougall in the course of his presentation.

At the annual business meeting of the AASGP, Wednesday afternoon, Carter D. Poland, Poland Soap Works, Anniston, Ala., in a statement on association activities, stated the belief that "for the best interest of . . . this Association, and especially for the welfare of the association itself, that the number of members of the board should be increased to include at least one small soaper. In addition to recommending that one small soaper should be on the board, Mr. Poland suggested the following: More small soapers should be put to work on committees; there should be a strong and active membership committee to cultivate members and to inform and encourage others to join; regional meetings at least every six months are desirable; there should be divisions to cover specific interests, such as potash soap, bulk soap, industrial cleansers, etc., these to be patterned after the glycerine division now in operation; there should be discussions of technical subjects which are of common interest; cost accounting and similar subjects should be discussed; there should be some work of mutual interest to everybody in the association, such as "Cleanliness Promotion."

Glycerine Market Promotion

MORE than 1300 million pounds of polyalcohols and glycerine were produced in 1948 as compared to the 605 million pounds produced in 1940, and 940 million pounds in 1946. In his paper "The Growing Consumption of Polyalcohols," N. N. Dalton, research director of AASGP, reviewed the output and consumption of glycerine, and said that one of the purposes of the meeting was to promote the glycerine market. An intensive publicity campaign for 1949 designed to inform the layman, technician and engineer of glycerine applications was described by Ralph Whiting, Armour & Company, Chicago, and E. S. Pattison, G. M. Basford Co., New York. A. P. Ames of Ames and Norr, New York, reviewed association publicity to date and stressed the promotion of glycerine as a household consumer's product. Investigation of the color forming materials of glycerine and other studies carried on in the Miner Laboratories, Chicago, were reported by Dr. C. S. Miner.

Resins Large Glycerine User

IN his paper "Alkyd Resin Technology," Dr. Ellington M. Beavers, Rohm & Haas Company, Philadelphia, reviewed the history of the discovery and preparation of these resins and enumerated applications of the resins. In the production of alkyd resins, more glycerine is used than all of the other polyhydric alcohols combined. The resins are modified with fatty acids to improve flexibility and other properties. Resins of a 40-45 ratio of resin to modifying agent are the most versatile of the alkyds, having a low viscosity and good solubility in aliphatic solvents. They are used in air-drying and baking white and colored enamels, are durable, and used where flexibility is required. For economic reasons, glycerides are substituted for the fatty acids in practice, although resins prepared with the fatty acids have a better color factor and are faster drying.

Industrial uses of soaps in the laundry, rug cleaning and textile industries were discussed at the Bulk Soap Group meeting on Jan. 27. Gordon Fulton, president of Beach Soap Co., Lawrence, Mass., presided.

The first speaker on the panel, Ralph B. Smith, director of the chemical engineering department of the New Jersey Laundry Owners' Assn., emphasized the need on the part of soap makers to establish performance tests for soaps in the laundry similar to specifications relating to soap composition, as set up by the American Society for Testing Materials and similar groups. Mr. Smith reviewed the conditions under which soap is used in the commercial laundry. He also outlined various factors affecting soap performance. In his talk entitled, "What the Laundry Expects from the Soap Manufacturer," Mr. Smith stated that the methods of using soap as a detergent have been developed largely through empirical methods and have not been properly evaluated

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Left to right, new officers and directors of the Soap and Detergent Manufacturers Association: George L. Simmonds, U. S. Sanitary Specialties Corp., Chicago, director; E. O. Gillam, Gillam Soap Works, Forth Worth, Tex., director; Herbert Kranich, Kranich Soap Co., Brooklyn, retiring president, director; Charles B. Solly, Harley Soap Co., Philadelphia, president and Bernard R. Freudenthal, Chemical Service Co. of Baltimore, eastern vice-president; Standing, A. G. Peck, Peck's Products Co., St. Louis, western vice-president; H. W. Zussman, Alrose Chemical Co., Providence, treasurer; Charles G. Young, Patek Co., San Francisco, director; Carl Schaad, Chemical Manufacturing & Distributing Co., Easton, Pa., director; W. Markland, John H. Breck, Inc., Springfield, Mass., director; A. Roy Allison, Stevens Grease & Oil Co., Cleveland, director; M. J. Murphy, Murphy-Phoenix Co., Cleveland, director and Dudley J. Bachrach, Clifton Chemical Co., New York. Not present: V. W. Haag, Haag Labs., Blue Island, Ill.; C. R. Litchtenberg, Chicago Sanitary Prods. Co.

SDMA MEETS; ELECTS SOLLY

POSSIBLE removal of export and import restrictions on fats and oils (which has taken place since the meeting) and a return to a free market in trading in these materials was discussed as the climax to the one-day annual meeting of the Soap and Detergent Manufacturers Association held January 25, at the Hotel New Yorker, New York. Charles E. Lund, associate chief, Food Branch, Office of the International Trade of the Department of Commerce, Washington, D. C., at the afternoon session of the second annual meeting of SDMA, queried the audience on suggestions as to possible relaxation of allocation controls on fats and oils.

The question of completely freeing trade in fats and oils from government control has been receiving close consideration recently as prices of fats and oils, with a few exceptions, have dropped to their lowest levels since OPA days. Mr. Lund's open questioning of the members of SDMA as to their reaction to possible relaxations of controls, coupled with reports at the meeting that there might be some congressional action along these lines, lent added weight to the belief that controls would soon end. Mr. Lund pointed to the fact that even the supplementary emergency allocation of 22 million pounds of inedible tallow and grease announced last November had failed to have any bullish effect on weakening tallow prices. He also noted that it was not until very recently that the supplementary export allocation had been taken up entirely.

A resolution recommending that controls be continued after their expiration date, February 28, 1949, put in the form of a motion by Ernest O. Gillam, head of the Fort Worth, Texas, soap firm bearing his name and a vice-president of SDMA, was seconded and passed unanimously.

SDMA's board at New York meeting votes to remain unaffiliated . . . hears fats and oils outlook for '49

Continuation of controls was urged to protect small soap manufacturers from possible sharp price rises of fats and oils that might follow removal of restrictions.

(Lifting of export controls on fats, oils and soap was effected in two steps. On February 7, export controls over all inedible fats and oils were removed by the Office of International Trade of the U. S. Department of Commerce. Three days later controls of exports of fats and oils to destinations outside the group of R countries of Europe were placed on general licensing by the O.I.T. At the same time it was decided by the International Emergency Food Committee of the U. S. Department of Agriculture to discontinue world allocations of fats and oils, which covered U. S. imports of these materials.

While controls on imports and exports were being eased, the U. S. Senate voted to extend the export control act until June 30, 1951, with a provision directing removal of controls over export of any agricultural commodity determined by the Secretary of Agriculture to be in short supply.)

Earlier in the day, George Prichard, director of the fats and oils branch of the U. S. Department of Agriculture, Washington, D.C., pointed out that continuation of controls had been recommended to government officials. In his talk, Mr. Prichard also observed that prices of (soap) products to consumers have not yet reflected recent declines in the cost of soap raw materials.

At the meeting, it was announced that the board of directors of the Soap and Detergent Manufacturers had voted to continue the group as an independent organization. Earlier there had been some discussions that the SDMA might affiliate as a division of another trade association, representing several related industries in the chemical specialties field.

Charles B. Solly, Harley Soap Co., Philadelphia, was elected president of SDMA to succeed Herbert Kranich of Kranich Soap Co., retiring president, who becomes a member of the board; Bernard Freudenthal, Chemical Service Co. of Baltimore, was elected eastern vice-president; A. G. Peck, Peck's Products Co., St. Louis, western vice-president; H. W. Zussman, Alrose Chemical Co., Providence, R. I., treasurer; and Andrew P. Federline continues as executive secretary.

Elected as directors were: George Simmonds, U. S. Sanitary Specialties Co., Chicago; Charles G. Young, Patek Co., San Francisco; Charles Lichtenberg, Chicago Sanitary Chemical Co., Chicago; Roy Allison, Stevens Grease & Oil Co., Cleveland; Charles B. Solly, Harley Soap Co., Philadelphia; Allen G. Peck, Peck's Products Co., St. Louis; E. O. Gillam, Gillam Soap Works, Fort Worth, Tex.; H. W. Zussman, Alrose Chemical Co., Providence, R. I.; Gerald Murphy, Murphy Phoenix Oil Co., Cleveland; Vernon Haag, Haag Laboratories, Blue Island, Ill.; Dudley Bachrach, Clifton Chemical Co., New York; Bernard Freudenthal, Chemical Service Co. of Baltimore (Md.); W. Markland, John H. Breck Co., Springfield, Mass.; Mr. Kranich; Carl Schaad, Chemical Manufacturing & Distributing Co., Easton, Pa.

THE meeting opened with an address by Herbert Kranich, SDMA president, who reviewed some of the accomplishments of the association during the past year, the first, incidentally, under its present name. "We are young, but we are learning rapidly," Mr. Kranich declared. He reported that the association for an independent organization received excellent cooperation from various government officials in Washington. He promised that the association would provide new services for its members during the coming year. The association will endeavor to make every independent soap manufacturer aware of the job it is trying to do and what its background is. SDMA has acquired real prestige in Washington and in the industry, Mr. Kranich told his audience.

Following the appointment of the nominating committee, which was composed of Allen Peck, chairman; Albert Selig, Selig Co., Atlanta; Vernon Haag; H. W. Zussman and Dudley Bachrach, Mr. Kranich turned the meeting over to Andrew P. Federline, executive secretary of the association, who introduced the speakers.

The first speaker, George Prichard, director, fats and oils branch, U. S. Department of Agriculture, discussed, "Fat and Oil Allocation Policy and Procedures." No new controls are being considered for any section of the industry, he reported. If any new controls were to be put into effect, Mr. Prichard pointed out, the industry would be advised of this possibility in advance and given an opportunity to state its views.

After pointing out that the prices of (soap) products to consumers do not reflect reductions in the cost of raw materials, he stated that fats and oils from domestic sources would be adequate to meet needs of soap makers during the coming year. The Fat Salvage Campaign has been discontinued, indicating the supply situation on tallow and grease. Harvests of such oil producing crops as soybeans, cotton and flax seed were large in 1948, Mr. Prichard said, and will be big again in 1949. Cattle slaughtered during the coming year will be fewer in number but heavier in weight, thus producing more tallow and grease than a year ago, and supplies of copra and coconut oil will be adequate in 1949, the speaker asserted. There will not be much palm oil available in 1949, Mr. Prichard pointed out.

Liquid edible oils are short on the world market, he added, which will affect coconut oil, copra and palm oil prices. In general, the need for edible oils is greater than the exportable surpluses. The demand will continue strong because of the continuation of ERP funds.

Speaking of U. S. and international controls, Mr. Prichard pointed out that IEFC and U. S. export controls were scheduled to expire June 30, 1949, while import allocation controls were scheduled for expiration Feb. 28, 1949. Continuation of these controls had been recommended, the speaker said. (They were ended Feb. 11 by the U. S. Dept. of Commerce.)

Mr. Prichard next explained the joint workings of the U. S. Depart-

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DIPHASE METAL CLEANERS

Part I. Preferential Wetting by the Two Phases

By Irving Reich and Foster Dee Snell*
Foster D. Snell, Inc.

DIPHASE or two-phase metal cleaners consist of a mixture of a solvent and water. A commercial product of this sort was studied with a view to determining the part played in the cleaning process by each liquid phase, as well as the part played by the other ingredients present. The unexpected results obtained led to a study of soap and synthetic detergents in terms of their effects in cleaning a layer of oil from steel.

The cleaner had the following composition.

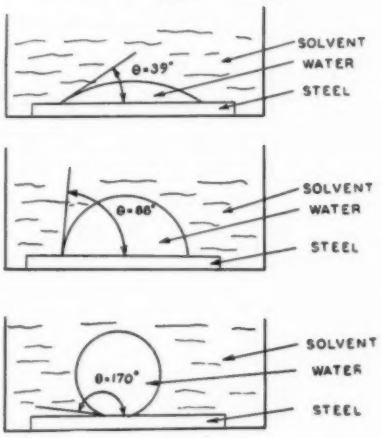
Formula I.	*Parts by volume*
Mineral spirits	56
Triethanolamine	2
Oleic acid	4
Butyl Cellosolve	1
Pine oil	15

Butyl cellosolve and pine oil are present to permit formation of a homogeneous solution of the triethanolamine oleate soap which forms, and to improve rust inhibition. In use this liquid is mixed with 10-60 volumes of water; the mixture is ordinarily sprayed over the metal surface to be cleaned. Soil is removed, leaving the metal apparently clean. Actually an extremely thin protective film remains, sufficient to prevent rusting over a period of several weeks, with proper handling.

Measurement of Contact Angles: WHEN two immiscible liquids are allowed to contact a solid surface at the same time, one of the liquids usually shows preferential wetting. That liquid spreads out over the surface, displacing most or all of the other liquid. A precise measure of preferential wetting can be given by contact angle measurements. Referring to Figure 1, a drop of one liquid, in this case water, is placed on the surface of the solid under a layer of the other liquid. A low contact angle, as in the top illustration, indicates that the water wets the solid preferentially. A contact angle of about 90°, as in the middle illustration, means that the two liquids show equal wetting tendencies. The third case shows preferential wetting by the solvent phase, the contact angle being greater than 90°. In general, if liquid A shows strong preferential wetting for a solid as compared with liquid B, it will be difficult for B to displace A from the solid surface. If the solid wet with A is placed in a bath of B, a film of A will remain attached to the surface. On the other hand, if B wets the solid preferentially, it will displace A readily under those conditions, liquid A being simply floated off in droplets.

Fig. 1. Contact Angles Illustrating Different Degrees of Wetting of a Surface by a Drop of Liquid.

θ = 39° Preferential Wetting
θ = 88° Intermediate Wetting
θ = 170° Negative Wetting



The contact angle of a droplet is most readily determined by measuring its base-width D and the height H. This can be done by a microscope set up to give a profile view of the droplet, and equipped with a micrometer eyepiece.

The contact angle θ is calculated from the formula $\text{Tan}\frac{\theta}{2} = \frac{2H}{D}$. For this formula to apply, it is necessary that the droplet be small, so that gravitational distortion of its shape can be ignored.

The effect of the ingredients on the wetting of solid surfaces by the two phases of the cleaner was studied by measurement of contact angles. The diphase mixture under study was shaken and allowed to separate; a portion of the aqueous phase was removed with a capillary tube, and droplets from this tube were placed on the test solid submerged in the oily phase. Clean steel and glass were used, representing different types of solid surface. The contact angles of the drops were determined by the above method. Results are shown in Table 1.

In interpreting these results, small contact angles—less than 90°—shows that water wets the surface better; large contact angles—over 90°—show that mineral spirits wet the surface better. With the first system of a mixture of plain water and mineral spirits alone, the contact angle was very close to 90° on steel, indicating that neither water nor solvent shows preferential wetting. On glass, the smaller angle of 39° shows that water wets preferentially. When triethanolamine is added as in System No. 2, the aqueous phase wets both steel

* Based on material published in *Industrial and Engineering Chemistry*, July, 1948.

TABLE I

Contact Angles of Aqueous Phase Under Solvent Phase on Steel and on Glass

System No.	Water ml.	Mineral spirits ml.	Triethanolamine ml.	Oleic acid ml.	Formula I ml.	Contact Angle on steel	Contact Angle on glass
1	480	56	—	—	—	88°	39°
2	480	56	2	—	—	36°	less than 6°
3	480	56	—	4	—	157-180°	52°
4	480	—	—	—	60	155-180°	8°

and glass better than in the absence of triethanolamine. In System No. 3, when oleic acid is added, the solvent phase shows strong preferential wetting of steel, while glass is wet by the aqueous phase to a lesser degree than in the absence of oleic acid. In System No. 4, in which one volume of Formula 1 was mixed with eight volumes of water, the solvent phase showed strong preferential wetting on steel while the water phase showed strong preferential wetting on glass.

In essence the angle on steel was as though no triethanolamine were present and the angle on glass was as though no oleic acid were present. Repetition of experiment D without pine oil or butyl cellosolve gave substantially the same result. It seemed that the same chemical substance, triethanolamine oleate, was causing preferential wetting of steel by solvent, and preferential wetting of glass by water.

In order to study what happens to the triethanolamine oleate in Formula 1, one part of this formula was stirred with 30 parts of water, warmed, and allowed to cool. Analysis of the two phases which separated showed that both solvent and aqueous phase contained triethanolamine oleate, but the solvent phase also contained a substantial amount of free oleic acid and the aqueous phase contained free triethanolamine.

The contact angles caused by triethanolamine oleate are now readily explained. Experiments 1, 2, and 3 show that triethanolamine alone is much more effective in lowering the interfacial angle of water against glass than oleic acid alone is in raising it. However, oleic acid alone is much more effective in raising the interfacial angle against steel than triethanolamine alone is in lowering it. Thus, when triethanolamine is present in the aqueous phase and oleic acid in the solvent phase, the effect of the former predominates in controlling wetting of glass, while the effect of the latter predominates in controlling wetting of steel.

The mechanism of this is presumably the following. Some of the excess free oleic acid in the solvent phase is sorbed onto the metal surface, with orientation of the polar groups inward, thus conferring a non-polar surface on the metal and causing preferential wetting by solvent. Similarly free triethanolamine is sorbed onto glass, thus causing even greater preferential wetting by water. The effect on glass may involve displacement by triethanolamine of a fairly loosely attached film of solvent formed when the glass is first immersed in solvent.

As would be expected from the contact angle results, powdered iron when shaken with a diphase cleaner plus water goes into the free solvent phase, while powdered pumice, feldspar, or alundum goes into the aqueous phase. Powdered iron shaken in pure solvent phase disperses well, while in pure aqueous phase it clots and precipitates immediately. Powdered alundum clots in pure oil phase but disperses in pure aqueous phase.

Negative Soil-Removal:

ONE consequence of the preferential wetting behavior noted is that water-soluble soaps could hinder metal cleaning instead of aiding it. In view of the contact angle of approximately 90°, it can be expected that if steel coated with mineral oil containing no polar substances is agitated with large amounts of water, the oil will be displaced and the steel thus cleaned. However, if a soap is present, fatty acid formed by hydrolysis can enter the oil film and cause preferential wetting of steel by oil to such an extent that the oil will not be displaced. If the oil film is also fairly viscous and agitation is not extreme, little emulsification can be expected, and substantially no cleaning will occur.

Earlier we had in fact encountered this. A series of experiments has been run to compare the effects of diphase cleaners and stable emulsion cleaners in removing soil from steel. The diphase cleaners were found much more effective. This will be discussed in another paper. Included among these tests were runs with distilled water and with a soap soution. The soap solution appeared to remove less soil than the water.

In order to investigate this further, steel washers were coated with a thin film of soil prepared by mixing 37 grams of powdered umber with 56 grams of a medium-viscosity mineral oil. The soiled washers were placed in Nessler tubes with water alone and with a number of solutions of different soaps and synthetic detergents. The tubes were rotated under fixed conditions and then examined for removal of soil. Results were rated from A for complete soil removal, to E for a uniform opaque coating of soil. A rating of B means a fairly clean but somewhat dull surface with a few adherent specks of soil. C means a very dull surface with many specks of visible soil. D means a soiled surface with some underlying metal visible. These results are shown in Table II.

TABLE II

Effect of Surface-active Agents in Cleaning Steel Coated With Oil and Umber

Solution	Concentration In %	Rating
Distilled water	—	B+
Sodium oleate	0.1	E
Triethanolamine oleate	0.1	E
Chip soap, 80% tallow—20% coconut oil	0.1	E
Sodium alkyl aryl sulfonate	0.1	C
Sodium lauryl sulfate	0.1	B
Nonionic "X"	0.1	B+
Nonionic "Y"*	0.15	B+
Lauryl pyridinium chloride	0.1	B

* Approximately 30% active agent, 70% water.

Water alone was fairly effective

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Above: a few of the more popular types of soot removers sold at retail.

SOOT REMOVERS

By Milton A. Lesser

NEWSPAPERS recently reported that the number of home owners in this country has increased steadily during the last few years. Indeed, the figures on privately owned homes have reached a new high. Of course, this means that there are more people who must tend furnace and learn the unpleasant chore of cleaning soot from the furnace, flues and chimney. In their search for ways to make things easier, many of these home owners have become acquainted with the chemical preparations sold as soot removers and chimney cleaners.

In addition to those who specialize in such items, a number of manufacturers of sanitary products and maintenance supplies have added soot removers to their line. An awareness of the potential market for these items is also indicated by the fact that a radio program on one of the large networks was sponsored during the winter of 1947-48 by a producer of soot removers.

Soot formation is a familiar phenomenon resulting from the imperfect combustion of fuel. In industry this effect is sometimes deliberately sought in order to obtain lampblack, carbon black and such for use in the compounding of rubber, inks, paints and other products. In heating systems, however, soot accumulation leads to inefficiency and is a dangerous fire hazard.(1)

According to Senner and Miller (2), poor combustion and soot formation may be due to any one or a combination of the following factors: (a) Lack of sufficient air to the furnace; (b) improper mixture of air with furnace gases; (c) low furnace temperature, (d) too small combustion space so that gases reach the comparatively cool furnace surfaces before they are completely burned and are condensed to form soot.

Soot formation leads to loss of heat and inefficient fuel utilization. Citing Government findings, one manufacturer of soot removers points out that a coating of only one-sixteenth of an inch in thickness diminishes heat transfer by 26.2 per cent. When the wall becomes one-eighth of an inch thick, heat transfer is reduced by 45.2 per cent. Studies (3) at the Bureau of Mines on the effect of soot on heat transmission in small boilers have yielded some interesting data. The studies were made with round, cast iron boilers with three intermediate sections; the boilers being operated at the average rate for a full heating season. It was found that the insulating effect of soot deposits decreased the heat absorbed by the boilers from the heat made available by the fuel. This decrease ranged from two to seven per cent, depending on the thickness of the deposit. Considering the all-over efficiency of this type of boiler, and expressing the losses in terms of coal consumption, such soot formation can

cause a waste of up to 4.5 per cent of fuel.

By careful adjustments it is possible to minimize soot formation. Nonetheless, it is generally recognized that it is not possible to obtain perfect fuel combustion in the household furnace.(4) As a matter of fact a certain proportion of fuel remains unburnt in any heating system, however efficient it may be. Part of this unburnt fuel passes off as carbon monoxide. The remainder forms heavy vapors containing complex carbon compounds, sometimes mixed with inorganic materials, which condense on the various surfaces as soot or pass off as smoke.

Since the efficiency and capacity of a boiler depends to a very great extent upon the cleanliness of the heat-transmitting surfaces, frequent soot removal is essential. When designing industrial boilers or larger heating installations, engineers often incorporate mechanical equipment for this purpose. (5,6) This may comprise automatic soot blowers, mechanical scrapers or certain special devices. (7) During the last year or so there has been much talk concerning the possibility of using ultrasonic or "silent sound" to eliminate soot. In one large Texas plant where carbon black is made, the installation of an ultrasonic device in the flue has eliminated the soot problem. (8,9)

Even with automatic or other mechanical apparatus, manual methods are frequently needed as supplements. Special brushes and steam lances are often used for this purpose. Patented burners are also employed to remove hardened scale and soot formations in boilers. (10) Manual cleaning or the use of portable mechanical equipment is necessary to assure thorough soot removal from household boilers and similar small furnaces, as well as from the flues and chimneys. The insertion of a brush or other cleaning aid does not present any particular problem with fireplaces and coal-burning furnaces. However, many manufacturers of oil-and gas-burning furnaces also provide means to facilitate the removal of soot.

More and more people are using soot-removing compounds as supplements to mechanical cleaning methods.

Now being produced in rod, brick or liquid form, soot removers, which depend for their effectiveness on salt mixtures, are growing in importance as recent household chemical specialty products.

It is now rather common practice to apply soot removers periodically for the purpose of removing soot deposits in the furnace, flue pipes and chimneys. Many persons have learned that these preparations often materially lessen the frequency with which home manual methods or professional mechanical cleanings are needed. Considerable fuel savings are also possible with the use of such compounds. Indeed one manufacturer claims that tests with his product have shown that savings of up to 25 per cent of the winter's fuel supply are attainable.

Soot Removers Save Labor

A much more conservative estimation of the value of soot removers has been given by Nicholls and Staples (11) in their discussion of some of the factors which make it worth while for householders to use such compounds. They feel that if all the surfaces of the heater can be reached, they should be scraped and brushed down regularly. However, in a furnace which has surfaces that cannot be cleaned by such means, cleaning can be done by using a soot remover, Such a compound saves labor in a furnace which gives constant trouble and needs frequent cleanings. A soot remover is also useful in a furnace which has not given much trouble previously, but which has begun to discharge smoke regularly out of the fire door. The practice of burning out soot in the flue pipe involves the risk of fire, and for those who use this method, the employment of a soot remover offers a more desirable, safer substitute.

With respect to larger boilers these experts are of the opinion that the conditions under which such furnaces are installed and operated make the use of soot-removing compounds rather unnecessary. However, they also remarked that the regular application of a remover might result in a saving of labor and result in improved operation when the draft is poor or where the furnace is being cared for by someone unable to give it the required mechanical cleanings.

Belief in the efficacy of soot removers and chimney cleaners goes back many years. Long ago it was discovered that flues and chimneys can be cleaned of soot accumulations by throwing common salt on the fire. A handful or two of salt thrown into the furnace is a well established method for removing soot. As an alternative to salt, oldtimers used zinc in various forms, such as old tops from fruit jars, old washboard coverings, and old dry cell batteries—the last were especially popular. (12) As refinements and improvements were made, a number of patents were granted and a variety of proprietary products appeared on the market.

Available in Three Forms

Nowadays soot removers are available as powders or granular products, in rod or brick form, and as liquids. The dry, free-flowing powders or granular preparations are the most popular. They are applicable for the cleaning of coal furnaces, oil furnaces circulating heaters, stoves and fireplaces. While there may be some variations with different compounds, the general instructions for applying such removers are essentially the same for powdered products. For example, for treating a furnace, it is necessary to start with a good fire that is burning well. Close the ash pit damper and the slots in the firing door and scatter the soot remover over the red-hot coal; the amount varies with the different compounds. Close the firing door and then reduce the draft by opening the check damper if there is one. This is done to give the fumes from the remover a bet-

ter chance to settle on the soot instead of going out the chimney. After 10 or 20 minutes, when fumes are no longer being formed, the fire is made to burn more fiercely by opening the ash pit. The slots in the firing door can then be opened and the firing door itself should be opened a crack, (11)

The same general procedure can be followed with cook stoves. In the case of fireplaces, it is necessary to sprinkle the remover over the hot coals at fairly frequent intervals because the draft cannot be controlled so readily. When powders are used for oil furnaces a modified procedure must be used, depending on the type of burner. For the pressure type of burner, for instance, one manufacturer recommends that the thermostat be raised to its highest heat. Some of the remover is then sprinkled on the hot fire bricks in front of the burner flame.

Molded soot removers, which consist essentially of the same type of materials in compressed form, are used for oil, gas and coal fired boilers. They are placed in the direct path of the flame; the bricks being used for general application, while the rods are employed where furnace openings are small (e.g. peep-holes). As incated by the directions on one such product, the number of units to be used will depend on the conditions and the number of square feet of radiation. Thus, several units may be required for initial cleaning, but only one, every week or so, for maintaining soot-free conditions.

Liquid preparations are used for removing soot from oil-burning furnaces. In former days, aqueous solutions of simple soot-removing salts were sprayed on the soot deposits. The burner was then turned on and, with a hot fire in the heater, the soot was burned off. This method faded in importance with the development and use of special oil-soluble compounds that could be added directly to the fuel in the tank. The amount of such compound to be added to the fuel oil depends on whether an initial cleaning is being done or whether preventive or maintenance measures are being applied.

Mode of Operation

WITH all compounds, the mechanism by which soot removers work is the same. The action of soot removers aims at the production of conditions which will cause the soot to ignite at a lower temperature and burn more easily. In order to perform this function, the remover must form a vapor and the particles of the vapor must deposit on the soot.(11) The effectiveness of the soot remover is indicated by its ability to reduce the ignition temperature of the soot deposits; the ignition temperature being the lowest temperature at which the soot ignites and continues to burn.

Although ability to lower ignition temperature is an important element, other factors must be taken into consideration. Among these are possible toxic effects from handling the material or from its vapors. The hazard of too rapid ignition or explosive tendencies also enters the picture. Price is also an important factor; a material that is very effective may be far too costly for general use.

A soot remover, no matter how carefully compounded with respect to ignition temperature, freedom from hazards, and low cost, will not be effective if it is not used under proper conditions. In order for the soot to burn, the gases coming in contact with the deposit must have a high enough temperature to ignite the soot. The gases must also contain some free oxygen. Only with this combination of conditions will there be a beneficial result from the use of soot removers. Means for obtaining these conditions have been outlined in the above discussion on methods of using the various types of products.

Since the action of soot removers is to cause soot to burn, they present certain fire hazards. As remarked by Nicholls and Staples,(11) vigorous burning of soot in the flue pipe or chimney always involves a risk unless the flue pipe and chimney are properly installed or constructed and are kept in good repair. Also pertinent is Topping's (13) report of several years ago which indicated another potential hazard from certain types of soot removers. Analyses of two such products showed that they should be classed as "low explosives" because of their extreme speed of burning.

For these reasons there are those (14), including the National Board of Fire Underwriters (15), who feel that the use of chemicals to remove soot should be discouraged. A legal aspect may also enter the picture. However, as far as can be determined, only one state, Connecticut, requires a permit for the manufacture and distribution of soot removers. Permits are issued there by the State Police Commissioner.(16)

It is generally recognized that the best results in soot removal are obtained by skilled experts using modern suction methods supplemented by mechanical means. Nonetheless, authorities (2,11) in the field recognize that the average householder cannot thoroughly remove soot and ash accumulations more than once a year. Hence, they are of the opinion that, where deposits of soot accumulate rapidly and interfere with the proper operation of a heater, the use of a soot remover may serve to keep the passages clear and maintain satisfactory operation of the furnace between annual cleanings.

It was also observed that the use of a remover avoids the greater risk associated with stuffing too large an amount of paper into the fire box to ignite the soot. The same degree of cleaning can be obtained with a lower temperature and less flame with a soot remover. Tests at the Bureau of Mines showed that in most instances the use of a remover did not result in violent burning. It was found that when burning is employed to remove soot, the risk is reduced if the operation is done often enough to prevent the accumulation of large amounts of soot, which produce a more intense flame when ignited.

Undoubtedly the most thorough investigation of soot removers was made by Nicholls and Staples(11) at the Bureau of Mines. A classic of its kind, their report should be read by anyone contemplating the manufacture of these products. Similar studies were made at the Fire Underwriters' Laboratories, Inc., but

a search of the literature has failed to show a published report of their findings. However, an abstract of their study is available from this group.(15)

Although the study does not cover heaters using liquid fuels, the data obtained at the Bureau of Mines are very complete with respect to the use of soot removers from other types of furnaces and flues. Not only does the report present a review of the subject, but it also includes the results of six series of tests on various aspects of soot removal by chemicals.

Salts Basic Material

ESPECIALLY important are the determinations on the relative effectiveness of various salts, materials, or mixtures as soot removers. For example, an examination was made of a number of metallic chlorides. The effectiveness of the salt deposits on the soot, with respect to lowering of ignition temperature, was found to be in the following increasing order of effectiveness: common salt (sodium chloride), chloride of lime, zinc chloride, tin chloride, lead chloride and copper chloride. Thus, common salt lowered the ignition temperature by only 166°F. and was less effective than any of the other chlorides tested. Nonetheless this inferiority is outweighted by such advantages as low cost and ready availability.

The effectiveness of various metals was determined. It was found, for example, that while metallic zinc burns very readily, by itself it is not effective as a soot remover. Significant, however, is the observation that if a mixture of two materials is used, one of which is a chloride, then the effectiveness of the mixture might be the equivalent of the chloride of the other. Thus, a mixture of zinc dust (which does not cause any decrease in ignition temperature) and common salt gave results which were as good as those obtained with zinc chloride. This salt decreases the ignition temperature by 235°F. and also gives good fumes and deposit. A mixture of 20 parts of zinc and 80 parts of common salt caused a decrease of 264°F. in the soot ignition temperature and gave a "very good" deposit.

An important part of this study was an analysis of sixteen commercial soot removers. Eight of these proprietary products were tested by the U. S. Bureau of Mines, along with a number of other combinations.

Common salt, by itself or in admixture with other substances, forms the basis of most powder-type soot removers. As already indicated, it has long been common practice to use salt as a soot remover; rock salt or ice-cream salt often being recommended(2,4) for the purpose. The salt vaporizes readily and does a better job on a hot bed if it is well sprinkled over the surface of the coals. The quantity required will depend on the size of the furnace, but a pound at a time is usually sufficient for the ordinary household boiler.(17) Another, simpler measurement is used by Nicholls and Staples, who suggest that two or three teacups are sufficient for a furnace in a six-room house. They feel that it is worth while to try common salt as a soot remover, particularly if frequent cleanings are necessary. Pertinent in this connection is their finding that some commercial soot removers consist only of common salt mixed with some powder to color and disguise it.

Strange as it may seem, it is an old and well established custom to throw salt on a fire to extinguish burning soot in the chimney.(16), 18,19) For this purpose, however, larger quantities of salt are used than are required for soot removal.

Salt Mixtures Best

AS a rule, better results are obtained when salt is mixed with other materials. An example of this effect has been noted in the mixture of common salt and zinc. Senner and Miller (2) also mention that a mixture of salt and 10 per cent of zinc dust is better than either one alone. The use of zinc oxide instead of zinc dust or small zinc granules does not yield better results. This is evident from the fact that a proprietary product made with 85 per cent of salt and 15 per cent of zinc oxide gave an ignition temperature decrease of only 160°F.

Salt-zinc mixtures may also be used in combination with other materials. A number of such preparations are described in both the older and newer technical literature. For instance Bennett's (20) formulary lists the following formula for a soot destroyer:

Common salt	85 parts
Copper sulfate	8 "
Zinc dust	7 "

A modification of this formula, given in the newest volume (21) of these reference texts, is as follows:

Coarse rock salt	125 parts
Zinc dust	2 "
Copper sulfate	2 "

Examination (11) of commercial soot removers showed that many of them contained coal dust, charcoal, wood shavings, sawdust and even lampblack. Illustrative of such preparations is a British chimney-cleaning powder (22) made with a higher-than-usual proportion of zinc and also containing sawdust:

Zinc dust	50 per cent
Sodium chloride	45 "
Sawdust	5 "

Among the proprietary soot removers analyzed and tested by Nicholls and Staples was one consisting of:

Common salt	45 "
Zinc	2 "
Sulfur	22 "
Sodium nitrate	31 "

This combination was found to cause a decrease of 232°F. in the soot ignition temperature.

Because it may cause more violent combustion than is necessary, objection has been raised to the presence of potassium nitrate. Nonetheless, a number of formulas contain this substance. Crowley,(18) for instance, suggests that a good chimney cleaning compound may be made from:

Common salt	7 lb.
Potassium nitrate	4 lb.
Flowers of sulfur	7 lb.
Copper sulfate	7 lb.
Ammonium chloride	8 lb.

The chemicals are thoroughly

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CAUSTIC SODA

By John R. Skeen
Market Research
Department
Foster D. Snell, Inc.

DURING the past six years the shortage of caustic soda has affected almost every industry, the principal consuming fields being the manufacture of soaps, cleansers, rayon and cellophane, pulp and paper, petroleum refining, and innumerable chemicals. Presently it appears that the demand for caustic is no longer increasing. If facilities already provided operate at maximum, it is probable that the chemical will be available in adequate amount this year.

Until a decade ago, the potential capacity to supply caustic soda exceeded the demand by a significant margin. This alkali is a co-product in the production of chlorine and a by-product of soda ash made by the ammonia process. With the growth of the chlorine industry, greater amounts of electrolytic caustic became available and it became sharply competitive with the older soda ash product. Chlorine manufacturers had to find a market for their caustic, and for a time,—before the war created such a big increase in demand, there was an excess productive capacity of more

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CAUSTIC SODA

unit : 1000 short tons

	Supply [1] (Apparent)	Production [2]					Electrolytic Plants		Exports [3]	Capacity [4]	Price [5]	Consumption [6]		
		Total	Lime-Soda	Electrolytic Sub-total	Commercial [7]	Other [8]	Pulp	Other		Electrolytic	¢/lb.	Soap	Rayon	Rubber
1917		495.7[9]	358.1	137.7			9	19			6.99			
1918	449.8	513.4							67.4		4.40			
1919		312.7					10	25	63.6	250[14]	3.19			
1920	268.0	382.7[9]							114.6		5.02			
1921		238.6	163.1	75.5					24.9	250[14]	3.83		25[16]	
1923		436.6	314.2	122.4					57.3		3.21	105	40	8
1925		497.3	355.8	141.5					50.5		3.10	110	49.5	16
1927	552.9	603.4[10]	387.2[10]	216.2[10]	186.2	30[11]			50.4		3.00	90	65	31
1929	731.2	791.8[10]	525.0	266.8[10]	236.8	30[11]			60.5	300[12]	290	108	111	40
1931	617.3	682.9[10]	455.8	227.1[10]	203.1	24[11]			65.6		2.524	91	108	14
1933	647.4	708.0[10]	439.4	268.6[10]	247.6	21[11]	12	23	60.7		2.762	86	144	9
1935	706.1	775.6[10]	437.0	338.6[10]	321.6	17[11]	12	25	69.6	350	2.600	96	163	11
1937	885.5	987.7	488.8	498.9[13]	479.9	19[12]	15	27	102.0	505	2.479	94	186	17
1939	913.3	1044.0	532.9	511.1[13]	492.1	19[12]	15	30	130.5	575	2.300	100	196	18
1941	1303.1	1429.3	686.0	743.3	713.3	30[12]	16	32	126.2	840[15]	2.300	125	270	23
1942	1491.9	1574.2	634.3	939.9			16	36	82.2	1015	2.300	120	300	20
1943	1615.1	1778.6	663.5	1115.2			16	42	163.6	1200	2.300	105	320	24
1944	1750.1	1871.5	688.6	1182.9			16	42	121.4		2.300	125	345	25
1945	1772.3	1864.3	735.0	1129.3			16	42	92.0		2.300	108	377	25
1946	1811.9	1872.9	742.9	1130.0			16	42	61.0		2.317	90	408	26
1947	1995.9	2134.2	747.2	1387.0			17	46	138.3	1450	2.605	110	455	27
1948 1Q	506.9	555.1	193.1	362.0			17	45	48.2		2.85	26[17]	120[18]	
2Q	518.1	563.1	182.5	380.6			17		45.0	1600	2.85	25[17]	122[18]	
3Q	546.4	593.4	194.3	399.1			17		47.1		3.05	26[17]	124[18]	

1 Total production plus net imports—exports.
2 1917-21: *Census of Manufacturers & Mineral Resources;* 1923-39: *Census of Manufacturers except as noted;* 1941-: *Facts for Industry,* series M19A and supplements.
3 1918-45: *U. S. Foreign Commerce & Navigation;* 1946-: *Report No. FT 410;* imports have been small, amounting to 701 tons in 1921 and less than 221 tons (1939) in other years.
4 Operating capacity as installed at year end; values are approximate only, and are not estimated from chlorine production.
5 76%, works, "contract" prices: 1917-1929; 1931-39: 76%, works, Bureau of Labor Statistics; 1941-: ammonia process, 76% solid, drums, c.l., wks, Bur. Labor Statistics.
6 As reported by *Chemical & Metallurgical Engineering* except as noted.
7 Signifies other than pulp and paper mill production and is only approximate thus: "sub-total" less "other."
8 Made and consumed in pulp mills; not necessarily total production of these mills.
9 Exclusive of caustic for soap manufacture.
10 As reported by Federal Power Commission and differs from *Census of Manufactures.*
11 Federal Power Commission.
12 *Chemical and Metallurgical Engineering.*
13 Greater than *Census* total by amount of "other," see 12.
14 "Trade" estimates.
15 Installed and building, 700,596 tons given by R. L. Murray, *Trans. Am. Inst. Chem. Eng.,* 36, 445, 1940; however, expansion exceeded the 1940 estimate.
16 Estimated from rayon production.
17 Estimated from soap sales—Association of American Soap and Glycerine Producers.
18 Approximate and estimated from total viscose rayon production.

RAW MATERIALS
FOR THE SOAP AND ALLIED INDUSTRIES

TALLOW
RED OIL
CAUSTIC SODA
STEARIC ACID
CAUSTIC POTASH
COCOANUT OIL
DRUMS—TANK CARS—TANK WAGONS
ANIMAL OILS, FATS,
CHEMICALS, VEGETABLE OILS

Every raw material necessary for the manufacture of soap and allied products is carried in stock and is available at the right price for immediate delivery to your door.

ALCOHOL
AMMONIA
BLEACHING POWDER
BORAX
BICARBONATE OF SODA
CARBON TETRACHLORIDE
CALCIUM CHLORIDE
CAUSTIC SODA
CAUSTIC POTASH
DISODIUM PHOSPHATE
GLAUBER'S SALTS
GLYCERINE
METASILICATE
OXALIC ACID
POTASSIUM CARBONATE
SAL AMMONIAC
SALT
SAL SODA
SILICATE OF SODA
SODA ASH
TRISODIUM PHOSPHATE
CASTOR OIL
COCOANUT OIL
CORN OIL
COTTONSEED OIL
LARD OIL
NEATSFOOT OIL
OLEIC ACID-RED OIL
OLIVE OIL
OLIVE OIL FOOTS
PALM OIL
PALM KERNEL OIL
PEANUT OIL
RAPESEED OIL
ROSIN
SALAD OIL
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EASTERN INDUSTRIES DIVISION
JOSEPH TURNER & CO.
RIDGEFIELD, N. J.

TRADE NEWS

Tyriver Joins Wrisley

R. E. Tyriver, formerly with Colgate-Palmolive-Peet Co., Jersey

R. E. TYRIVER

City, N. J., recently joined Allen B. Wrisley Co., Chicago, as field sales manager. In his new post he will be responsible for the promotion of all Wrisley brands of soaps and toiletries. At one time, Mr. Tyriver was general sales manager of Manhattan Soap Co., New York.

Mennen Heads Heart Fund

William G. Mennen, president of Mennen Co., Newark, N. J., was recently appointed general chairman of the New Jersey Heart Association's first annual appeal for funds for combatting heart disease. The appeal, which has a goal of $200,000, runs through February.

P&G Forms New Subsidiary

Formation of a wholly owned subsidiary company to take over radio, television and motion picture activities previously handled by its advertising department was announced during January by Procter & Gamble Co., Cincinnati. The new subsidiary, which is capitalized at $1,000,000, will be known as Procter & Gamble Productions, Inc. Officers and directors had not been named at the time the announcement was made. The new company will continue to work directly with the advertising agencies and independent producers in conducting the business of buying and producing radio and television programs and motion pictures.

Jergens Advances Two

Louis B. Jurgens was recently advanced to the position of assistant advertising manager in charge of "Woodbury" products by Andrew Jergens Co., Cincinnati. Robert F. Holyoke was named assistant advertising manager of products bearing the "Jergens" name.

Germany Buys Dutch Soap

Almost all soap produced in Holland in the months of Jan., Feb. and Mar., will be shipped to Western Germany under a one million dollar purchase agreement, it was announced recently. Approximately 3,300 tons will be delivered in monthly quotas of 1,000 tons each, the remaining 300 tons to be delivered in April. The soap was bought under the existing Netherlands-Bizone trade agreement.

C-P-P Names Watt

Colgate - Palmolive - Peet Co., Jersey City, N. J., has announced the appointment of Homer S. Watt to the position of sales manager of the central division.

Below: George H. Kent, who was recently appointed director of sales for E. F. Drew & Co., New York. He was formerly director of sales planning and general economics for Koppers Co., Pittsburgh. Earlier Mr. Kent was director of marketing research for Libbey-Owens-Ford Glass Co., Toledo. In his new post with Drew he will be responsible for the coordination of all sales activities.

Albany Soap Elects

Albany Soap Corp., Albany, N. Y., recently announced the elec-

JOSEPH GRUBER

tion of the following officers for 1949 at the firm's annual meeting, Jan. 11: President and general manager, Joseph Gruber; vice-president and assistant manager, William H. Geier; treasurer, Mrs. Madeline Grober; secretary, Harry J. Geier; foreman, Michael C. Beck.

Changes at Fitch

Fred W. Fitch, founder of the Des Moines, Ia., firm bearing his name was recently elected chairman of the board. He is succeeded as president by his son, Lucius W. Fitch. Other officers who were reelected include: Gail W. Fitch, vice-president in charge of advertising; L. R. Sandahl, vice-president in charge of sales, and R. H. Young, secretary and treasurer.

New Kamen Detergent

A new synthetic detergent of the alkyl aryl sulfonate type, designated "Kamenol D," was introduced recently by Kamen Soap Products Co., New York. The new detergent comes in white bead or slurry paste form, and has active ingredients which are clear and soluble in hard or soft water. It is said to be active in low concentrations and non-irritating to the skin. A descriptive bulletin is available on request.

Gilman Joins C-P-P

John R. Gilman, formerly vice-president in charge of advertising for Lever Brothers Co., Cambridge, Mass., recently joined Colgate-Palmolive-Peet Co., Jersey City, N. J., as a vice-president. Mr. Gilman, whose resignation from Lever Brothers was announced recently, had been with the firm since his graduation from Harvard over 30 years ago. During that time he had been closely associated with F. A. Countway, who built the American business for Lever and who retired three years ago as Lever president.

JOHN R. GILMAN

A director of Lever Brothers Co., Mr. Gilman had been successively assistant advertising manager, associate advertising manager and finally vice-president in charge of advertising. A native of Boston, where he has lived all of his life, Mr. Gilman is married, has a son and three daughters. He was to assume his new duties with Colgate-Palmolive-Peet on Feb. 15.

Berje in New Quarters

Berje Products Co., moved during January from 366 West Broadway to new and larger quarters at 616 W. 44th St., New York 18. The new location provides increased space for manufacturing facilities. Berje plans to expand its line of specialty items in the perfuming materials field.

In New P&G Post

The appointment of William J. Batterberry to the newly created position of director of copy for Procter & Gamble Co., Cincinnati, was announced during January. He has been with the firm since 1928 and has been active in both brand promotion and copy divisions of P&G's advertising department. From 1931 to 1940 Mr. Batterberry was advertising manager of Thomas Hedley & Co., Procter & Gamble's fully owned subsidiary in England. He will make his headquarters at the company's general offices in Cincinnati.

New Carpet Cleaner

"Karpet-Kare," a new water soluble compound for on-location shampooing of carpets was introduced recently by Bigelow-Sanford Carpet Co., New York. For the time being use of the product will be limited to commercial cleaners operating under a Bigelow contract. Contracts will be granted only to firms agreeing to a course of special instruction under Bigelow supervision.

Beauty Show Dates

The 1949 International Beauty Show will be held Apr. 4-7, at Grand Central Palace, New York, it was announced recently by Joseph Byrne, managing director. In addition to exhibits, there will be a number of discussion sessions.

Leavitt Heads Chi. Group

James T. Leavitt, vice-president of Central Solvents & Chemical Co., was recently elected president of the Chicago Perfumery, Soap & Extract Association. Other newly elected officers include: vice-president, W. F. Kammerer of George Lueders & Co.; secretary, Charles E. Arch, New England Collapsible Tube Co. and treasurer, J. C. Browning, Hydrosol, Inc.

JAMES T. LEAVITT

Bernard Nolting Dies

Bernard L. Nolting, 61, secretary of Welch, Holme & Clark Co., New York, died at his home Jan. 12. He had been with the firm since 1905.

Below: The new St. Louis display and sales office of Anchor Hocking Glass Corp., located on the twelfth floor of the Paul Brown Building. At left is semi-circular, shoulder-high display shelf topped with strips of fluted glass.

Forms New Firm

Richard Strassburger, for 15 years with Allen B. Wrisley Co., Chicago, most of which time he represented the firm in New York and New Jersey, recently announced the formation of Strassburger Associates, 299 Madison, New York, to represent manufacturers in the drug and toilet goods fields.

With Lueders 25 Years

With the completion of 25 years as an employe of George Lueders & Co., New York, Mrs. Winifred Sargent recently became the forty-second member of the company's Twenty-five Year Club. She was guest of honor at a luncheon tendered her at the Drug Club.

William H. Rihl Dies

William H. Rihl, sales engineer for Proctor & Schwartz Co., Philadelphia died suddenly Dec. 29. He had been with the firm since 1898. He was honored by the company last year upon completion of 50 years with Proctor & Schwartz. Originally, he was an outside erector of Proctor & Schwartz equipment, later joining the firm as a sales engineer. In recent years he concentrated all his activities on soap and textile dryers.

Furman Joins Gane-Ingram

Gerald S. Furman, formerly director of field sales for Merck & Co., Rahway, N. J., has joined Gane & Ingram, Inc., New York, as vice-president in charge of domestic sales, it was announced during January. He has been active in the chemical industry for over 27 years. Mr. Furman's appointment is part of the expansion program begun by Gane & Ingram, producers and distributors of aromatic and pharmaceutical chemicals.

Perkin Medal to Miner

Dr. Carl S. Miner of Miner Laboratories, Chicago, was awarded the Perkin Medal for 1949 by the Society of Chemical Industry, American Section, at a dinner, Jan. 7, at the Hotel Commodore, New York. Dr. Marston T. Bogert presented the medal, the presentation being followed by an address by Dr. Miner on the subject, "Science vs. Starvation."

Deegan Joins Turner

Walter T. Deegan, formerly of Monsanto Chemical Co., St. Louis, was recently named manager of the midwestern new products division of Joseph Turner & Co., Ridgefield, N. J. Mr. Deegan, who represented Monsanto for 17 years in the midwest, will make his headquarters at Turner's Chicago office in Tribune Tower.

Human Progress

P&G Sales Up in Quarter

An increase in his company's sales for the first quarter of its fiscal year, as compared with the corresponding quarter of 1947, was reported in Boston recently by Thomas J. Wood, vice-president in charge of sales for Procter & Gamble Co., Cincinnati. For the three months ending in Sept., 1948 P&G had sales of $190,778,000, compared with $147,392,000 in the fourth quarter of the previous year, Mr. Wood stated. Sales for the quarter ending in Dec. 1947 were given as $196,620,000. Price reductions on soap products and "Crisco" shortening have stimulated sales, according to Mr. Wood, who termed sales satisfactory.

Toiletries Salesmen Elect

Dave Engel of Charles of the Ritz was elected president of the Chicago Associated Toiletries Salesmen at the recent annual meeting. A. H. Bergstrom of Tussy, Inc., is the new vice-president, and W. R. Tenney of Lentheric, Inc., was re-elected secretary-treasurer. Preparations were begun for the organization's 1949 trade show, whose dates will be announced at a later date.

Renderers Meet in Chicago

Roy W. Peet, secretary-manager of the Association of American Soap & Glycerine Producers, Inc., New York, was one of the guest speakers at the 15th anniversary convention of the National Renderers Association, held at the Stevens Hotel, Chicago, recently. John T. LaForge, Jr., of the Freeport, Ill., firm bearing his name, was reelected president for his fourth term as head of the organization. The forum discussions of problems affecting the rendering industry and its customers were the highlights of the program, which also featured an address by Dr. John Lee Coulter, consulting economist on fats and oils, of Washington, D. C.

Joins Litho Firm

J. B. Jones, for the past 15 years associated with Procter & Gamble Co., Cincinnati, recently joined the sales staff of Cincinnati Lithographing Co.

Here's RIGHT way!

The perfuming of soaps, with its problems of discoloration, chemical reactions and odor masking, requires highly technical as well as creative abilities. The *right way* to develop a soap perfume is to consider these technical factors carefully, keeping also in mind the ultimate consumer market of the product, its price and its package. The perfume chemists of van Ameringen-Haebler are experienced in developing soap perfumes the *right way*.

VAN AMERINGEN-HAEBLER, INC.

manufacturers and creators of the finest perfume materials

Essential Oil Assn. Elects

H. P. Wesemann, second vice-president and secretary of Fritzsche

H. P. WESERMANN

Brothers, Inc., New York, was elected president of the Essential Oil Association of the U.S.A., at the organization's recent annual meeting at the Hotel Plaza, New York. He was formerly vice-president and succeeds William Schilling, Jr., of Norda Essential Oil & Chemical Co., who was appointed to the executive committee. Succeeding Mr. Wesemann as vice-president is Gerard J. Danco of the New York firm bearing his name. G. H. McGlynn of Magnus, Mabee & Reynard, Inc., New York, was named secretary-treasurer and F. J. Lueders of George Leuders & Co., New York, was elected to the executive committee. Ray C. Schlotterer continues as managing director.

C. B. Robbins Dies

Calvin Boardman Robbins, eastern sales manager for Allen B. Wrisley Co., Chicago, died recently in Englewood (N. J.) Hospital, after a long illness. He was 60. A native of Malden, Mass., he was a member of the Masons, the American Legion and the Sales Executive Club. He is survived by his wife, two sons, a daughter and a brother.

Charles Mace Dies

Charles A. Mace, 68, from 1927 until December, 1948, secretary of the Synthetic Organic Chemical Manufacturers Association of the United States, and more recently consultant of the association, died suddenly at his home in New York, Jan. 3. He had been in poor health recently. A graduate of Massachusetts Institute of Technology, Mr. Mace had worked for a number of chemical firms before taking a post with the S.O.C.M.A. He is survived by his widow and two married daughters.

Coast Chem. Salesmen Elect

The Chemical Salesmen's Association of California recently elected the following officers: President, W. H. Oliver, Stauffer Chemical Co.; first vice-president, Harold Scism, Dow Chemical Co.; second vice-president, Raoul J. Landry, Shell Chemical Corp.; third vice-president, Arthur Oppedal, Braun, Knecht, Heimann Co.; treasurer, A. W. Hempelmann, Monsanto Chemical Co.; secretary, Arthur McCurdy, Northern Chemical Products Corp.

P.I. Control Soap Imports

Laundry soap, lard and toilet preparations are now subject to import controls by the Philippine Islands, according to a recent report of the Office of International Control of the U. S. Department of Commerce, Washington, D. C. Import controls apply to luxury and non-essential items.

ACS Meets in March

The 115th annual meeting of the American Chemical Society will be held in San Francisco Mar. 28-Apr. 1. Recent developments in insecticides will be discussed at the meeting.

Stultz Back from Trip

Elias D. Stultz, president of Welch, Holme & Clark Co., New York, recently returned from a three-week trip through the West Indies and South America.

Gibson Joins Wollen

Laurence D. Gibson, for nearly 20 years vice-president and chief chemist of Cunningham Cleanser Corp., New York, recently joined Wollen Chemical and Supply Co., Paterson, N. J., as technical director and production manager.

Pepsodent Makes Chnges

The appointment of Harry D. McQueen as wholesale sales manager

OTTO J. HAJEK

and Otto J. Hajek as assistant to the general sales manager and a realignment of divisional sales managers in three sales territories were announced recently by the Pepsodent Division of Lever Brothers Co. Mr. McQueen will make his headquarters at the division's central office in Chicago. He will be responsible for the Pepsodent Division's entire wholesale operation. Since 1945, Mr. McQueen has served as Chicago divisional sales manager.

Mr. Hajek, who has been with Pepsodent since 1927, has worked for the past four years with the sales department as a sales assistant.

Dain D. Fuller has been appointed Chicago divisional sales manager. He formerly was sales manager of the firm's Cleveland division for the past four years, having joined the Pepsodent organization in 1937 as a district manager. Appointed New York divisional sales manager is G. Winston Jeide.

Arthur R. Thompson has been named Cleveland divisional sales manager.

duPont Advances Mentzer

Charles T. Mentzer, Jr., assistant manager of fine chemicals sales in the organic chemicals department of E. I. du Pont de Nemours & Co., Wilmington, was recently appointed sales supervisor in the department's New York office. He has been with the company since 1929.

ORONITE CHEMICAL COMPANY

THE NAME TO WATCH IN CHEMICALS

REG. U. S. PAT. OFF.

FOR FASTER WASHING, GREATER ECONOMY, CHOOSE D-40 DETERGENT

The high surface activity of D-40 in low concentrations means a saving in materials, labor, wear and tear of equipment.

Faster penetration, quicker "break," easier rinsing, all help to speed up the wash.

Greater foam heights, stability, detergency, shorter wetting times and quick solubility in hard or soft water are a few of the advantages of this outstanding detergent.

D-40 is easily blended with other materials. As a cleaner by itself, it is unsurpassed. If you want to improve your wash or make water wetter, contact the Oronite office nearest you.

A typical example of improved cleaning methods is the use of D-40 to cut road grime and grease from railroad cars. The stability of D-40 in acid or alkaline based cleaners provides an economic advantage. Corrosivity and harmful paint removal can be reduced. Quick penetration, soil suspension and easier rinsing, all help to do the wash faster at lower cost.

ORONITE CHEMICAL COMPANY

38 SANSOME STREET, SAN FRANCISCO 4, CALIFORNIA
STANDARD OIL BLDG., LOS ANGELES 15, CALIFORNIA
30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK
600 S. MICHIGAN AVENUE, CHICAGO 5, ILLINOIS

Williams Aids Fund Drive

Victor E. Williams, director of sales of the organic chemicals division, Monsanto Chemical Co., New York, was recently appointed chairman of the drug and chemical division of the Beekman-Downtown Hospital 1949 Maintenance Fund.

VICTOR F. WILLIAMS

W. E. Oyler (left), manager of Lever Brothers Co. plant in Hammond, Ind., receives from E. A. Moss, vice -president of Swift & Co., Chicago, transmittal papers on the first tank car shipment of decolorized oil from Swift's new technical products plant in Hammond. The new Swift plant has units for carrying out solvent crystalization, solvent fractionation and fat splitting. For the first time these processes are integrally operated.

Mfg. Chemists to Meet

The annual meeting of the Manufacturing Chemists' Association will be held at Skytop, Pa., June 2, according to a recent announcement.

Offers Cleaner To Jobbers

Alexander Chemical Co., Brooklyn, currently is offering its synthetic "Sani-Solv" cleaner to the building maintenance jobbing trade. Said to reduce waxing and wax usage, the cleaner is recommended for a wide variety of floors, enameled or varnished surfaces, carpets, automobiles, woodwork and cement. It is golden in color and possesses a pleasant odor. "Sani-Solv" provides a prime treatment for re-waxing and requires no rinsing, according to the company.

Safety Award Winners

Lever Bros. Co., Hammond, Ind., and W. C. Ritchie & Co., Chicago, were among 29 winners of top honors in the semi-annual interplant accident prevention contest sponsored by the Greater Chicago Safety Council.

Lueders Names Wheeler

George L. Wheeler, formerly connected with Wyeth, Inc., and Sharp & Dohme, Philadelphia, during the past 15 years, recently was appointed Philadelphia representative of George Lueders & Co., New York. Mr. Wheeler succeeds William F. Kiefer, who died in November. He will make his headquarters at the Lueders offices, 12 South 12th St.

Resigns as Chairman

H. M. Hooker, chairman of the board of Hooker Electrochemical Co., Niagara Falls, N. Y., recently resigned after having been associated with the firm for 36 years. He will continue as a member of the board.

E. J. Conord, P&G, Dies

Edmund J. Conord, 52, an accountant for the Procter & Gamble Co. plant on Staten Island, N. Y., died of a heart attack Jan. 17, while on a visit to Lakeland, Fla. He had been with P&G for 25 years.

Dr. Kilheffer Retires

Dr. Elvin H. Kilheffer of the development department of E. I. du Pont de Nemours & Co., Wilmington, Del., and president of the Synthetic Organic Chemical Manufacturers Association, retired Feb. 1. He had been with the firm for 29 years.

Photograph below was taken at the annual dinner dance, held at the Hotel New Yorker, New York, Jan. 11, concluding the two-day sales conference of Fritzsche Brothers, Inc., New York. A visit to the firm's Clifton, N. J., factory was one of the highlights of the meeting.

For

COMPOUNDING or REPACKING

Water Softeners...
Bath Crystals...
Cleaning Compounds—

There's nothing quite like

SOLVAY SNOWFLAKE† CRYSTALS

SOLVAY
TRADE MARK REG. U. S. PAT. OFF.

Don't be misled! Others may imitate, but no other product matches the many highly desirable features of Solvay SNOWFLAKE CRYSTALS. In addition to providing the qualities of a true sesquicarbonate of soda, Solvay SNOWFLAKE CRYSTALS offers numerous other exclusive advantages—see complete list. Package it as it is . . . or use it as an ingredient in your compounds, Solvay SNOWFLAKE CRYSTALS will help make your product a standout—and a sellout!

- Mixes well with other ingredients
- Non-caking
- Free-flowing—ideal for filling machines
- Mild and non-irritating to the skin
- Softens water promptly and effectively
- Dissolves instantly
- Perfectly stable
- Attractive package appearance

SPECIAL! Solvay Technical Service is available, without charge, to help you compound your formulae. Write or telephone the nearest Solvay office for this service . . . at no obligation.

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ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street **New York 6, N. Y.**

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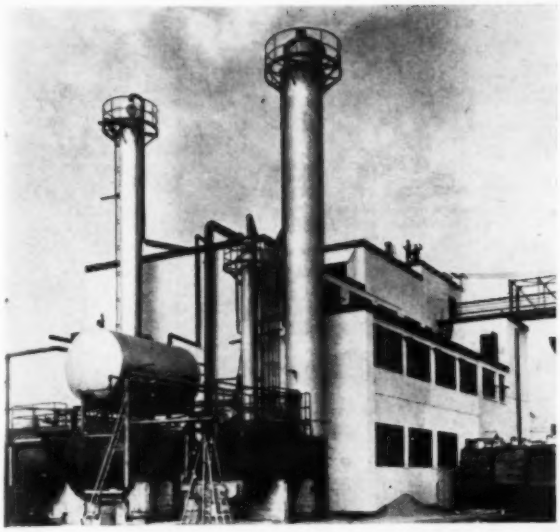


Left: Recently completed plant of Niagara Alkali Co. at Niagara Falls, N. Y., for the production of trichlorethylene, a chlorinated solvent used as a metal cleansing and degreasing agent. Plans to manufacture and sell trichlorethylene are in line with company's policy of greater diversification.

Stolen Essential Oils

A case containing several items of essential oils belonging to Gerard J. Danco, Inc., New York, was stolen in transit recently between Cannes, France and New York. The case contained essences of thym blanche, petitgrain sur fleurs resinoide cyste, sandalwood and fenouil doux. The merchandise bore the label of Camilli, Albert & LaLoue, Grasse, and another label bearing the name of Gerard J. Danco, Inc., as exclusive agents for the United States, Canada and Mexico. Essential oil buyers are asked to be on the lookout for such materials coming through unauthorized channels and to contact Me. Danco should they be offered such oils.

A. M. W. Carter Dies

Alfred M. W. Carter, 58, of Ottawa, Canada, associate chief, Inspection Services, Plant Production Division, Department of Agriculture of the Dominion of Canada, died suddenly Jan. 20.

E. A. Olds Dies

Edward Allen Olds, Jr., 69, chairman of the board of Packers Tar Soap, Inc., Mystic, Conn., was found dead in his automobile in a gully near Groton, Conn., Dec. 31. He joined the soap firm owned by his father in 1900. He travelled for the firm in India, Egypt, and the Near East, becoming president in 1926. He became chairman of the board in 1944. He was director of the United States Trade Mark Association. He is survived by his wife, Mrs. Edith Mitchell Olds; three sons;; a married daughter; a sister and brother.

Committee D12 to Meet

Committee D12 (Soaps and Detergents) of the American Society for Testing Materials will be held at the Sheridan Hotel (formerly the Hotel Park Central) New York, March 22 and 23.

Dr. Isermann Dies

Dr. Samuel Isermann, president of Van Dyk & Co., Belleville, N. J., died Feb. 1, in San Antonio, Tex., on the way to his winter home in Tucson, Ariz.

C-P-P Cuts Soap Prices

Price reductions of about six percent in wholesale prices of household soaps were announced early this month by Colgate-Palmolive-Peet Co., Jersey City, N. J. Similar reductions were announced last December.

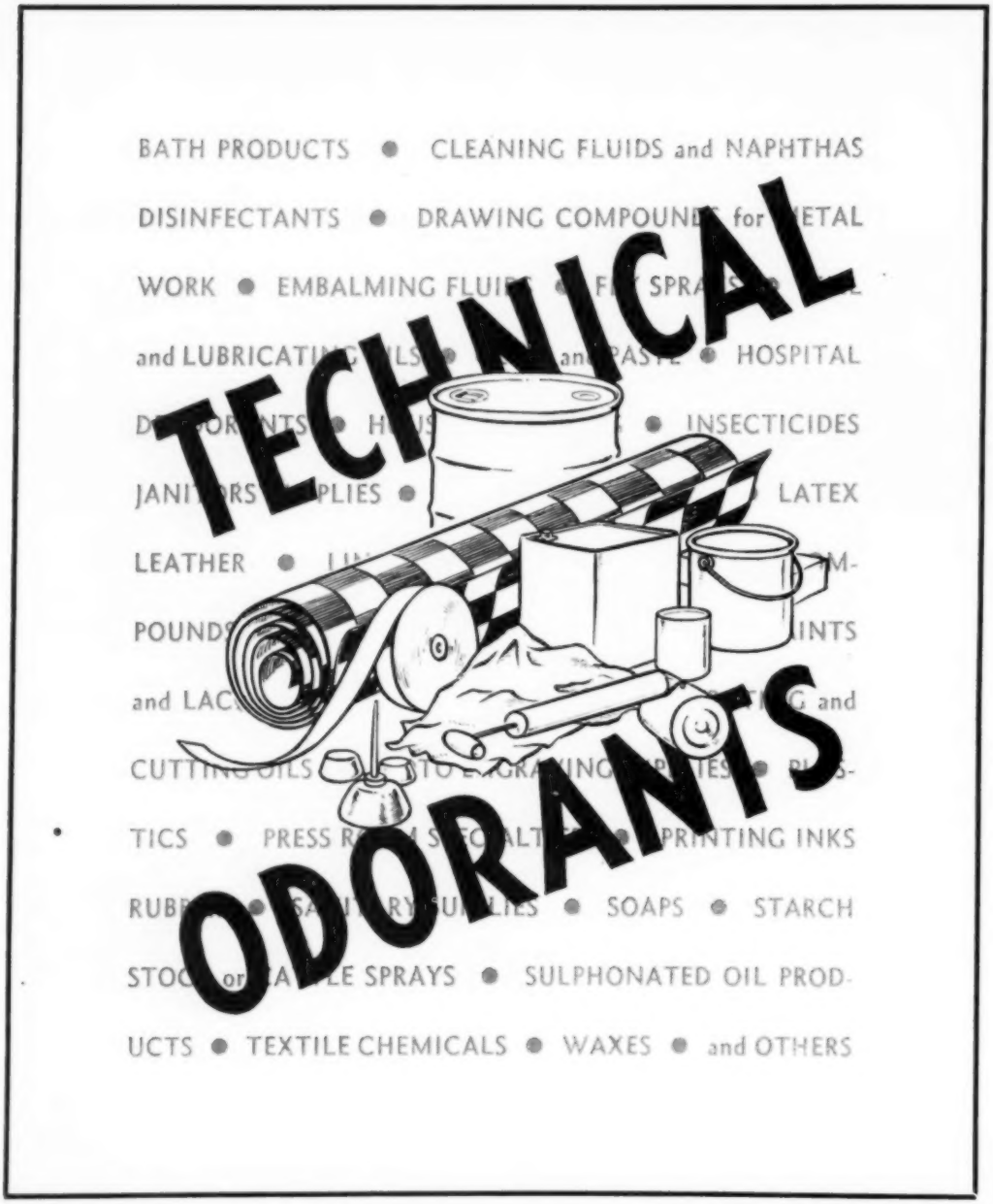
Seal Spout President Dies

Henry Brucker, 74, co-founder and president of Seal Spout Corp., Newark, N. J., died after a brief illness Jan. 9 in Lutheran Memorial Hospital, Newark.

New Pepsodent Product

The introduction of "Rayve" home permanent wave kit was announced by the Pepsodent Division of Lever Brothers Co., Chicago, in mid-January. "Rayve" replaces "Hedy Wave Home Permanent" which was acquired by Pepsodent-Lever in May, 1948 with the purchase of William R. Warner Co.

Right: Now "Rayve" home permanent wave set, introduced last month by the Pepsodent division of Lever Brothers, Co., Chicago, at a cocktail party at the Stork Club, New York. Feature of the new home permanent is the chart (in lower left hand corner), which when properly set gives the correct timing procedure for the product. "Rayve" will be marketed in 60,000 drug, department and variety stores in the U. S.



WHATEVER your product . . . . whatever the odor—be it strong, repellent or offensive—if sales are retarded by its presence, then it's time you consulted us! As pioneers in the field of technical odorants, we have developed effective, low-cost deodorants and neutralizing compounds for scores of individual manufacturers and top-rank industries. Chances are we already have the efficient, time-tested modifier needed to bring immediate solution to your odor problem. Write our Technical Division concerning your needs.

FRITZSCHE Established 1871 **Brothers, Inc.**

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES *and* °STOCKS: *Atlanta, Georgia, °Boston, Massachusetts, °Chicago, Illinois, Cincinnati, Ohio, Cleveland, Ohio, Dallas, Texas, Detroit, Michigan, °Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, °St. Louis, Missouri, °Toronto, Canada and °Mexico, D. F.* FACTORY: *Clifton, N. J.*

Dunney Ungerer Sect.

William H. Dunney, Jr., for the past 13 years a perfumer with

WILLIAM H. DUNNEY

Ungerer & Co., New York, manufacturers of essential oils, aromatic chemicals and flavoring materials, was appointed secretary of the company at a meeting of the board of directors, January 10, 1949. He has been associated with the perfume industry for the past 31 years, has been a perfumer for 23 years.

AOCS Sets Meeting Dates

The 1950 annual meeting of the American Oil Chemists' Society will be held some time in May, in Atlanta, according to a recent announcement from the society. T. C. Law of Law and Co. will be honorary chairman and E. C. Ainslie of Buckeye Cotton Oil Co. will be chairman.

The Hotel Roosevelt, New Orleans, will be the scene of the 1949 annual meeting, which is being held May 10-12. T. H. Hopper of the Southern Regional Research Laboratory is chairman. Fundamental research and practical engineering aspects of fat and oil chemistry will be the two main phases of the New Orleans meeting.

Continuation of the refresher course given for the first time at the University of Illinois last summer has been announced by the AOCS. The subject matter of the course will be varied from year to year.

DCAT Committees

Robert B. Magnus of Magnus, Mabee & Reynard, Inc., New York, chairman of the Drug, Chemical and Allied Trades Section, New York Board of Trade, announced recently that he had appointed a number of chairmen to head committees for the 23rd Annual DCAT Dinner, to be held March 10, 1949, at the Waldorf-Astoria Hotel, New York.

Calgon Names Utesch

Donald N. Utesch, in service and sales work in Chicago for the

DONALD N. UTESCH

firm since October, 1944, has been appointed sales manager of "Calgon" in the laundry and dry cleaning field, it was announced recently by Calgon, Inc., Pittsburgh. Prior to joining the firm in 1944, he was with International Minerals & Chemical Corp., Chicago, for two years as a chemical sales representative covering the eastern United States. Previously, he was connected with the commercial laundry business in various capacities for a number of years. A graduate of Carthage College, he later studied physical chemistry at Northwestern University. In the next four years he did research work in laundry detergent materials at Armour General Laboratories.

Below: Dinner concluding the three-day sales meeting of Magnus, Mabee & Reynard Inc., New York, held at the Hotel Warwick, New York, Jan. 7-9. One of the banquet highlights was the induction of Gosta Hedstrom, chief analytical chemist into the company's 20 year club. Percy C. Magnus, president, in the concluding address stated that the outlook for business was good, even though the sellers' market is over.

IMPORTED OILS

OF THE HIGHEST QUALITY

OILS OF

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BIDS AND AWARDS

VA Award to Cowles

Cowles Chemical Co., Cleveland, recently received the award on 537,800 pounds of dishwashing compound in a recent opening by the Veterans Administration, Washington, D. C. The compound, which is for use in mechanical dishwashing machines, is to be packed in 100 and 300 pound drums. Recommended strength of the compound is six ounces to 10 gallons of water.

P. O. Soap Bids

In a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C., the following bids were received on 18,000 pounds of soap powder: Stevens Soap Corp., Brooklyn, 4.5 cents, fob Brooklyn and five cents, fob Washington, D. C.; Swift & Co., Washington, 4.75 cents, fob East Cambridge, Mass. and 5.65 cents fob Washington; Unity Sanitary Supply Co., New York, 7.4 cents, fob New York and Kamen Soap Products Co., Barberton, O., 5.44, fob New York 5.97 cents.

Metal Polish Bids

The following bids were received on an unspecified quantity of metal polish in a recent opening for miscellaneous supplies by the Federal Bureau of Supply, Treasury Department, Washington, D. C.: American Products Co., Reidsville, N. C., $1; Noxon, Inc., Ozone Park, N. Y., 37.5 cents; Bri-Test, Inc., New York, 27.5 cents; Fuller Brush Co., Hartford, Conn., 41 cents; Solarine Co., Baltimore, 27.5 cents; Oil Specialties & Refining Co., Brooklyn, 22.9 cents; Walter W. Miller Co., Indianapolis, 45 cents; Welmaid Mfg. Corp., Chicago, 38.25 cents; Trio Chemical Works, Brooklyn, 20 cents; Uncle Sam Chemical Co., New York, 30 cents; John J. Lanczycki, New Bedford, Mass., $1.20; Park Chemical Co., Detroit, 45 cents; S. S. Stafford, New York, 40.5 cents; Lasting Products Co., Baltimore, 52 cents; Ches-White Co., Baltimore, 31 cents; R. M. Hollingshead Corp., Camden, N. J., 35.9 cents; Imperial Products Co., Philadelphia, 19.1 cents; Automatic Electrical Devices Co., Cincinnati, 65 cents.

Sweeping Compound Bids

Among the bids received in an opening for miscellaneous supplies by the Treasury Department, Federal Bureau of Supply, Washington, D. C., on an unspecified quantity of sweeping compound were those of: Dixie Janitor Supply Co., Washington, $2.90 a hundred pounds; John Shea Co., Lawrence Mass., 2.2 cents; Dayson Products Co., Washington, 2.84 cents in plywood containers; Worth Spar Co., Middletown, Conn., 2.7 cents in lined 50 pound burlap bags; Michigan Sweeping Compound Co., Detroit, three cents in 75 pound metal drums; Sanitary Soap Co., Paterson, N. J., $2.23 a hundred pounds; Fidelity Cleaning Supply Co., Philadelphia, 3.52 cents; Specialty Manufacturing Co., St. Louis, $4.97 a hundred pounds in 300 pound barrels and 36,000 pounds, c.l., at $4.81 a hundred pounds; Paxson Manufacturing Co., Philadelphia, 2.8 cents; Murro Chemical Co., New York, 2.19 cents in 150 pound containers; George Chemical Co., Boston, five cents in fiber containers; Cotterel Co., Harrisburg, Pa., 2.8885 cents; Southeastern Chemical Co., Atlanta, $3.15 a hundred pounds.

Treasury Soap Bids

In a recent opening for miscellaneous supplies by the Treasury Department, Federal Bureau of Supply, the following bids were received on item 1, soap powder, 51S-1730, item 2, toilet soap, 51S-1900: Lightfoot Schultz Co., New York, item 2, 35 cents; Stevens Soap Corp., Brooklyn, item 1, 5.58 cents; U. S, Soap Mfg. Co., Philadelphia, item 1, 6.04 cents, item 2, 23.25 cents; Chicago Sanitary Products Co., Chicago, item 1, 12 cents, item 2, 27 cents; George Chemical Co., Boston, item 1, 7.5 cents, 60 to a carton; Chemical Manufacturing & Distributing Co., Easton, Pa., item 1, 4.95 cents; E. F. Drew & Co., New York, item 1, 7 cents, 60 boxes to a carton; Iowa Soap Co., Burlington, Ia., item 2, 25.6 cents, 500, one-ounce unwrapped bars per case; Lanair Chemical Corp., Chicago, item 2, 23.23 cents; Hershey Estates, Soap Division, Hershey, Pa., item 2, 19.5 cents, alternate, two ounce cakes, 150 to a box; Quigley Co., New York, item 1, 5.5 cents, 24 to a carton.

P. O. Soap Bids

The following bids were received on 60,000 pounds of toilet soap in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C.: Allen B. Wrisley & Co., Chicago, 20 cents a pound, fob Chicago, 20.83 cents a pound, fob Washington; Pioneer Soap Co., San Francisco, 17.8 cents; Stahl Soap Corp., Glendale, N. Y., fob. Washington, 15.95 cents; Swift & Co., Washington, fob Cambridge, Mass., 15.36 cents, alternate, 16.02 cents or fob Washington, 15.92 cents, alternate, 16.82 cents; Unity Sanitary Supply Co., New York, 25 cents.

Washing Compound Bids

Bids on an unspecified quantity of dish washing machine compound were received in a recent opening for miscellaneous supplies by the Treasury Department, Federal Bureau of Supply, Washington, D. C., from: Daycon Products Co., Washington, 10.75 cents; National Milling & Chemical Co., Philadelphia, 7.51 cents; Stevens Soap Corp., Brooklyn, eight cents; Economics Laboratory, St. Paul, Minn., 8.294 cents; National Cleanser Products Co., New York, 10.25 cents; Barton Chemical Co., Chicago, 12 cents; National Cleanser Products Co., New York, 10.25 cents.

TGA Section Meets May 19

The next meeting of the Scientific Section of the Toilet Goods Association will be held at the Waldorf Astoria Hotel, New York, Thursday, May 19. The meeting will be held on the third day of the annual three day convention of the T.G.A.

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NEW TRADE MARKS

THE following trade-marks were published in the January issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of February 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

N & F — This for soap cleanser. Filed Jan. 22, 1947 by Nelson-French Co., Inc., New York. Claims use since Oct. 10, 1946.

Cenlab—This for disinfecting powder. Filed Oct. 22, 1946 by Marx Chemical Supply Co., Chicago. Claims use since Feb., 1940.

Glomeco — This for coconut oil shampoo. Filed Feb. 5, 1947 by Globe Medicine Co., Kinston, N. C. Claims use since Jan. 1, 1944.

Madam Elizabeth Nelson—This for shampoo. Filed May 1, 1947 by Madam Elizabeth Nelson, Detroit. Claims use since Jan. 1, 1920.

Cadet—This for chemical deodorant air-conditioner. Filed July 3, 1947 by Cadet Laboratories, Worcester, Mass. Claims use since Apr., 1939.

"Bottled Brilliance"—This for polish cream for automobiles, furniture, etc. Filed Aug. 20, 1946 by Sapolin Paints, Inc., New York. Claims use since 1926.

Quaker Girl — This for self-polishing floor wax. Filed Jan. 10, 1947 by C. M. Laboratory and Tool Co., Chicago. Claims use since Nov. 20, 1942.

Farm Master—This for insecticides. Filed Nov. 21, 1945 by Sears, Roebuck & Co., Chicago. Claims use since July 15, 1941.

Pennsalt Arresto-Moth — This for insecticides. Filed Apr. 26, 1947 by Pennsylvania Salt Manufacturing Co., Philadelphia. Claims use since Apr. 7, 1947.

Flornu—This for liquid floor polish. Filed June 12, 1947 by Fox Products Co., New York. Claims use since Apr. 1, 1946.

Miramide — This for all-purpose cleaner. Filed Dec. 16, 1947 by John J. O'Conner, Inc., New York. Claims use since Sept. 9, 1946.

Vicar Star — This for cleanser in powder form for use in electric dishwashing machines. Filed Feb. 2, 1948 by Virginia-Carolina Chemical Corp., Richmond, Va. Claims use since Jan. 7, 1948.

Victawet — This for wetting agents. Filed July 12, 1947 by Victor Chemical Works, Chicago. Claims use since January, 1946.

Undelex — This for powder and ointment for athlete's foot. Filed Aug. 28, 1947 by Brunswick Laboratories, Chicago. Claims use since May, 1947.

Rustarest — This for chemical compounds in liquid form for use as a rust preventive. Filed Nov. 4, 1947 by International Rustproof Corp., Cleveland. Claims use since Mar. 15, 1931.

Gay Manhattan—This for bubble bath. Filed Feb. 9, 1948 by Daggett & Ramsdell, Inc., New York. Claims use since Dec. 19, 1947.

S-at — This for atmospheric deodorants. Filed Mar. 24, 1948 by Synco Products, Chattanooga, Tenn. Claims use since Jan. 12, 1948.

Nice'n'Brite — This for polishing powder for various metals. Filed May 21, 1946 by Visco Brothers, Philadelphia. Claims use since Apr. 20, 1946.

Prime Sohp — This for detergent composition for use in washing textile materials. Filed Aug. 12, 1947 by Beach Soap Co., Lawrence, Mass. Claims use since July 16, 1942.

Scourite—This for kitchen utensil cleaner of metal tinsel. Filed Aug. 20, 1947 by Springfield Wire and Tinsel Co. Claims use since Jan. 4, 1927.

Opening Night — This for soap. Filed Sept. 11, 1947 by Lucien LeLong, Inc., Chicago. Claims use since Mar., 1942.

Insect-O-Soap—This for liquid soap for use with insecticides as a carrier or spreader. Filed Oct. 8, 1947 by Andrew Wilson, Inc., Springfield, N. J. Claims use since June 16, 1938.

Edmur—This for silver polish. Filed Feb. 18, 1948 by Edmur Laboratories Newark, N. J. Claims use since Jan. 7, 1948.

Bathasweet—This for soap. Filed Feb. 28, 1948 by Bathasweet Corp., New York. Claims use since Oct. 1, 1947.

Swiftly—This for cleaning preparations for removing wax from floors. Filed May 28, 1948 by Boston Chemical Industries, Inc., Boston. Claims use since Mar. 12, 1948.

Polestar — This for cleaning compound for heavy degreasing and bottle washing. Filed June 3, 1948 by Cudahy Packing Co., Chicago. Claims use since Feb. 9, 1938.

Conti Verde—This for soap. Filed July 1, 1948 by Conti Products Corp., Brooklyn. Claims use since Nov., 1947.

Rodantu—This for rat poison. Filed Apr. 22, 1947 by Roberts Laboratories, Salisbury, Mo. Claims use since Jan. 1, 1947.

Salomint — This for tooth paste. Filed Oct. 31, 1947 by Salomint Laboratories, Cleveland, O. Claims use since Oct. 20, 1947.

Santaloom—This for surface active compounds as wetting and emulsifying agents. Filed Apr. 5, 1948 by Monsanto Chemical Co., St. Louis. Claims use since Nov. 19, 1947.

Santomon—This for surface active compounds for use as wetting and emulsifying agents. Filed Apr. 5 1948 by Monsanto Chemical Co, St. Louis. Claims use since Nov. 25, 1947.

Simmons—This for wax for polishing wood and metal surfaces. Filed Aug. 11, 1947 by Shapleigh Hardware Co., St. Louis. Claims use since June 3, 1910.

Varnish Food—This for liquid furniture polish. Filed Sept. 19, 1947 by McDougall-Butler Co., Buffalo. Claims use since 1915.

Xonox—This for detergent cleaning compound in liquid form for use as an all-purpose cleaner. Filed Sept. 12, 1947 by Valley Chemicals Co., Germantown, O. Claims use since Aug. 16, 1947.

Powerphyl — This for scrub soap. Filed Nov. 21, 1947 by Fuld Brothers, Inc., Baltimore. Claims use since Sept. 16, 1947.

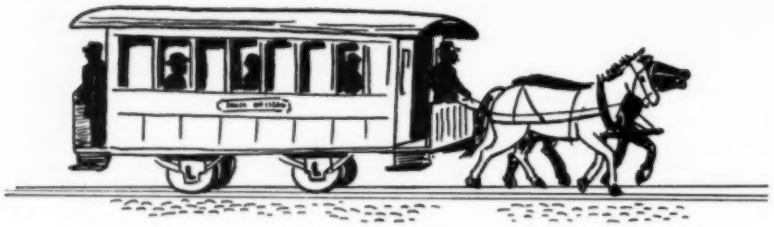
Sun-Sect — This for insect repellants. Filed July 25, 1947 by Kent Cosmetics, Highland Park, Ill. Claims use since Apr. 4, 1947.

Benlo — This for paradichlorobenzene. Filed Aug. 8, 1947 by Benlo Chemicals, Milwaukee. Claims use since Oct. 21, 1944.

Estercide — This for insecticides. Filed Oct. 3, 1947 by California Spray-Chemical Corp., Richmond, Cal. Claims use since Aug. 11, 1947.

Elixir de Guerlain—This for dentifrices. Filed Oct. 21, 1947 by Guerlain Perfumery Corp., New York. Claims use since Feb, 1923.

Clorox—This for cleansing and germicidal compounds. Filed Nov. 25,



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Oleo Stearine	Tallow
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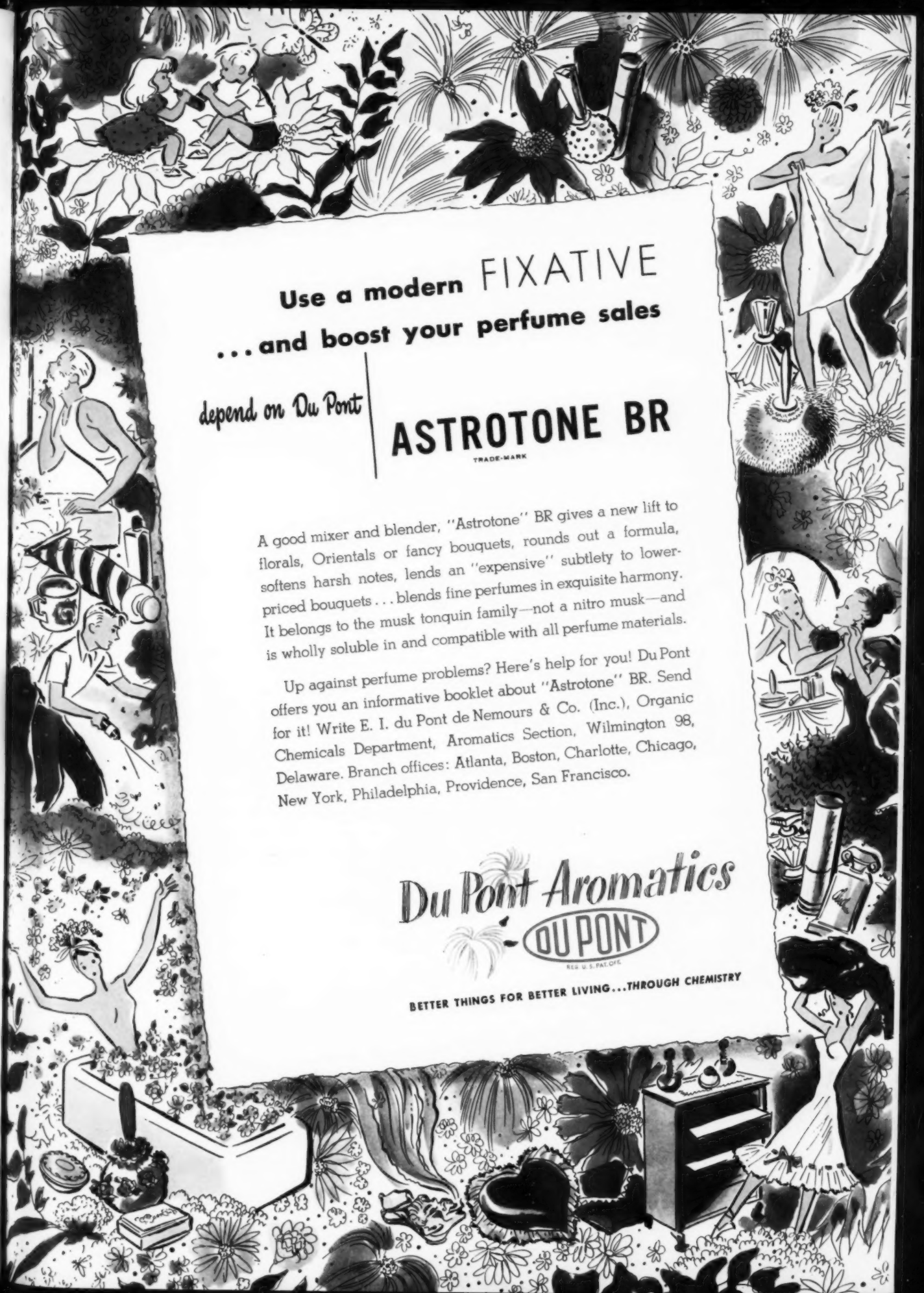

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Ribbon uniformity is governed by the degree of precision with which the chilling machine is engineered and built. Proper drying is brought about only to the extent that there is a uniform circulation of heated air, for the proper time, at the right temperature to suit the characteristics of the particular soap.

That is why the Proctor automatic flake soap system is engineered to such rigid specifications. Ribbons formed by the chilling machine are dependably uniform. In the dryer, an even circulation of heated air is maintained through the bed of soap and across the entire width of the conveyors. The speed at which the conveyors move and the temperature within the dryer can be regulated to suit the characteristics of the soap being handled.

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1947 by Clorox Chemical Co., Oakland, Calif. Claims use since May, 1940.

BRIJ — This for wetting agents. Filed Dec. 10, 1947 by Atlas Powder Co., Wilmington, Del. Claims use since Nov. 13, 1947.

Metaphen—This for concentrations of a chemical compound suitable for use as an antiseptic. Filed Jan. 20, 1948 by Abbott Laboratories, North Chicago. Claims use since Oct., 1923.

Tussy—This for soap and washing compounds for textiles. Filed Apr. 10, 1948 by Lehn & Fink Products Corp., Bloomfield, N. J. Claims use since Sept. 12, 1939.

Regal 4 Square—This for moth preventive and insecticide. Filed Aug. 4, 1947 by Galree Products Co., New York. Claims use since Feb. 15, 1935.

SoKleen—This for household bleach. Filed Aug. 15, 1947 by So Kleen Products, Oakland, Calif. Claims use since Mar. 1, 1940.

Refresh-R—This for liquid air deodorizer. Filed Oct. 1, 1947 by C. M. Kimball Co., Boston. Claims use since Apr. 17, 1940.

Mil-ett—This for cream shampoo. Filed Nov. 28, 1947 by Superior Beauty Products Co., Chicago. Claims use since Nov. 21, 1947.

Dyclene—This for chemical preparation for cleaning metals prior to electroplating. Filed Feb. 6, 1948 by MacDermid, Inc., Waterbury, Conn. Claims use since Jan. 10, 1940.

Metalex—This for cleansing preparation for cleaning metals. Filed Feb. 6, 1948 by MacDermid, Inc., Waterbury, Conn. Claims use since May, 1940.

Rivicol—This for insecticide. Filed Dec. 10, 1948 by Riverdale Chemical Co., Harvey, Ill. Claims use since June 1, 1945.

Dorothy Gray—This for shampoo. Filed May 29, 1948 by Lehn & Fink Products Corp., Bloomfield, N. J. Claims use since 1916.

Slo-Surface — This for floor wax. Filed Dec. 9, 1947 by Franklin Research Co., Philadelphia. Claims use since Sept. 29, 1947.

D-Luxe—This for granular chemical product for use in cleaning machinery in the dairy, food and beverage industries. Filed Aug. 2, 1947 by Diversey Corp., Chicago. Claims use since Jan. 10, 1940.

Heavy Duty—This for cleanser in granular form. Filed Aug. 2, 1947 by Diversey Corp., Chicago. Claims use since Aug. 7, 1934.

Solvex—This for cleaning preparation for dissolving wax, etc., from lacquered surfaces. Filed Apr. 16, 1948 by American Lacquer Solvents Co., Phoenixville, Pa. Claims use since Apr. 1, 1928.

Formula 24 — This for caustic in powder form for use in degreasing heavy industrial equipment. Filed June 3, 1948 by Cudahy Packing Co., Chicago. Claims use since Nov. 18, 1941.

Gibson—This for soap polish and mopping powder for use in cleaning marble, tile, terrazzo, porcelain, enamels, etc. Filed June 3, 1948 by Cudahy Packing Co., Chicago. Claims use since Jan. 2, 1907.

Manhattan—This for scouring powder. Filed June 3, 1948 by Cudahy Packing Co., Chicago. Claims use since Jan. 2, 1907.

Protex-Lin — This for detergent builder for use with soap in washing and laundry compounds. Filed June 3, 1948 by Cudahy Packing Co., Chicago. Claims use since Mar. 27, 1941.

Twin White—This for toilet soap. Filed June 3, 1948 by Cudahy Packing Co., Chicago. Claims use since Oct. 10, 1922.

Prevol—This for cleaner and deodorant for cleaning and removing rust stains and discolorations from toilet bowls and urinals. Filed July 14, 1948 by Selig Co., Atlanta. Claims use since May 18, 1948.

Magic Water — This for surface cleaner. Filed July 16, 1948 by Witt Cleaner Co., Jacksonville, Fla. Claims use since Dec. 27, 1947.

Wonderfoam—This for soaps. Filed July 20, 1948 by Lloyd Sargent Co., New Rochelle, N. Y. Claims use since Jan. 8, 1948.

Scan—This for wax base cleaner. Filed Sept. 27, 1948 by S. V. Cain, Inc., Peoria, Ill. Claims use since Jan. 8, 1947.

New Packer Filler

Packer Machinery Corp., New York, recently announced a new vacuum filling machine, "Packer, Jr." It is assembled with either stainless steel or brass, nickel plated spouts that are interchangeable. The new filler is mounted on casters, thus making for mobility and adaptability for small plant operations as well as short runs. Rails on "Packer, Jr." are adjustable to a width of four and one-half inches, so that various size containers can be handled. Bottles and cans from a fraction of an ounce to quart sizes can be filled at the rate of 100 per minute. All varieties of liquids, whether hot or cold, can be filled with the new machine. Literature and further details are available on request.

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All cleanser requirements.
Extending synthetic detergents in mixes.

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230% more Na_2O than trisodium phosphate (Hyd)
30% more Na_2O than orthosilicate (Hyd)

Excellent soil remover.

Brightens textile colors (laundering and "soaping off").

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Ideal for dairies, beverage plants, food plants, dishwashing, garages, floor and wall cleaning, laundries, textiles scouring and finishing, dyeing, washing, transportation equipment, private brand materials.

Low moisture—15-17%

Synthetic sulfonates sufficient for wetting, penetrating and light sudsing.

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RAW MATERIAL MARKETS

As of February 8, 1949

FURTHER declines in oil and fat prices, removal of export controls on oils and fats to specific areas and issuance of large supplemental export allocations of fats and oils were the highlights of the marketing news during the past month. In addition, predictions of sizable increases in production of fats and oils both domestically and throughout the world during the coming year were made by responsible government sources.

Fat and oil prices changes were, without exception, downward. Some reached lows that have not been recorded since OPA days. Tallow, currently being bought for 8 cents a pound, is a half-cent under the price set by OPA. It has come down from a price of 14 cents on the fancy grade quoted Jan. 3. Coconut oil, breaking sharply, is currently selling for 13 cents a pound, crude Pacific Coast basis, as against 18½ cents a pound, same basis, a month ago. Further cuts, which are being reflected in price reductions on soap at both retail and wholesale levels by at least three major soap producers, affect cottonseed oil, which dropped from 16 to 13½ cents a pound; soybean, which went from 15½ to 12 cents a pound and corn oil, which is now 14¾ cents a pound, as against 16½ a month ago. Peanut oil at 17¼ cents a pound is one quarter of a cent higher than it was a month ago. Copra, despite demand for coconut oil from Europe as an edible, is quoted at $180 a ton, as against $242 on this date in January. Linseed oil, bulwarked against any severe price drop because of the high support price on the flaxseed crop, is maintaining an unnaturally high price at 27.50 cents, slightly under last month's price of 27.80 cents. Meanwhile, stocks of both flax and linseed continue to pile up.

As was widely anticipated when fat and oil prices continued to fall despite large supplementary export allocations, relaxtion or removal license requirements on fats and oils which had been openly discussed, were effected Feb. 7. Controls on tallow and grease, olive oil foots, vegetable oil foots, fatty acids of vegetable origin, stearic acid, oleic acid, flaxseed,

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Synthetic Detergents	Soaps	Cleaning Compounds
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Increased sequestering action	Increased sequestering action	Increased sequestering action
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Concentrated soap powders

Streakless car wash & others

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fish oil and soap stock were among the items for which controls were dropped for shipment to countries other than those in Europe.

Continuation of export controls was approved by committees of the House and Senate early in February following hearings by indusery and government representatives. Both bills (Spence H. R. 1661 and Maybank S. 548) were passed in committee and were taken up on the floors of both houses immediately following the vote. They extend the export control program through June 30, 1951. However, export controls on edible and inedible fats and oils were lifted during February.

Supplemental export allocations announced during the past month by the Production and Marketing Administration of the U. S. Dept. of Agriculture, included 109 million pounds (oil equivalent) of fats, oils and oilseeds. On Jan. 26 the U.S.D.A. announced a supplemental export allocation of 40 million pounds of inedible tallow and grease to "Contingency" for licensing by the Office of International Trade. Of the 40 million pounds' 20 million pounds were to be licensed only as low grade inedible tallow and grease. There was to be no restriction on the remaining 20 million pounds. Another supplemental export allocation of 105,000,000 pounds edible of fats and oils was announced Feb. 1.

Increases in the supply of copra and coconut oil and palm oil during the coming year were predicted by an official of the Office of Foreign Agricultural Relations, U. S . Dept. of Commerce. Hesitated that Philippine copra and coconut oil production for export in 1949 may reach 800,000 long tons. More copra is expected to be available from the Netherlands East Indies during 1949 than was produced last year, when the monthly export rate was 20,000 pounds. In addition, world production of palm oil is expected to be up during the coming year. Recently the U. S. acquired 10,000 tons of palm oil, worth $3,970,000, representing nearly 50 percent of the exportable surplus of Sumatra. The acquisition will go into the strategic stockpile of the U.S. World supplies of palm oil will not be up to prewar for some time to come, the Dept. of Commerce official stated. Expanding production in the Belgian Congo, where over 100,000 tons of high grade palm oil will be produced in the coming year, is about double pre-war.

World production of fats and oils in 1948 totaled about 20,800, 000 short tons in terms of fat, which was about four percent under the prewar average.

First commercial U. S. production of Montan wax began recently at a plant in Buena Vista, Calif. The first commercial carload shipment to the East Coast was made recently, following extensive pilot plant investigation and operation at the Buena Vista plant.

Price changes on essential oils saw declines on lavender flower oil and savin oil. Ceylon citronella and clove oils both advanced, the latter 10 cents per pound, the former seven cents a pound. Declines in floral oils from Western Africa are expected as a consequence of a reduction of the export duty from 25 to 12 percent.

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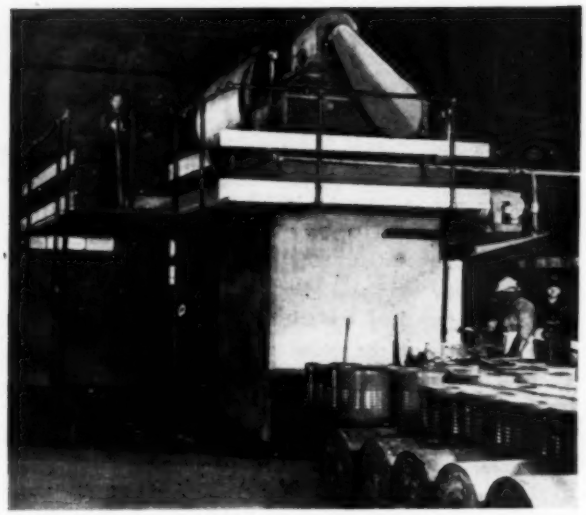

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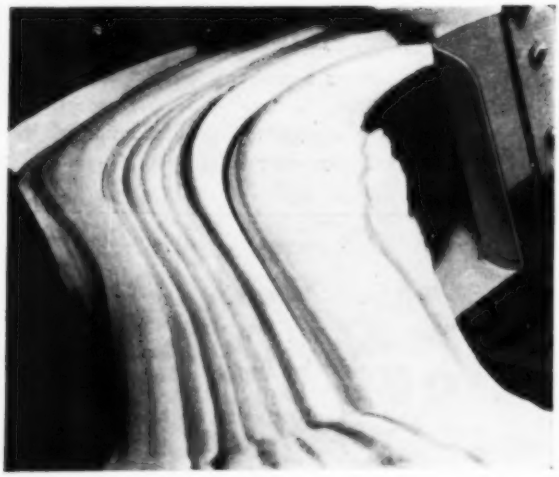
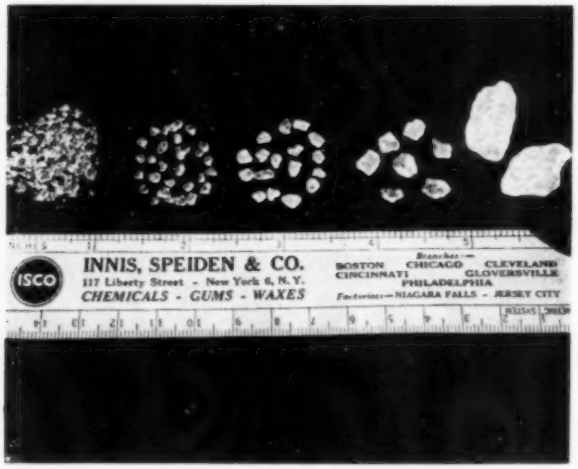


SOAP MATERIALS—In addition to Caustic Potash, among the Isco products for use in the soap industry are Caustic Soda, Potassium Carbonate, Lanolin for superfatting, Absorption Bases for special soaps.



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PRODUCTION SECTION

SILICATES IN SOAPS

SODIUM silicates are composed of varying proportions of sodium oxide, silica and water. More than 50 products varying in the ratio of these three components are commercially available in Great Britain, as well as several potassium silicates. For example, GC has a SiO_2:Na_2O ratio of 2.0:1.0 and is an amorphous hydrated powder. SSC is an essentially anhydrous solid of the same ratio. The GC silicate is spray dried, and the SSC powder finely ground to provide rapid solubility. Silicates with a silica to alkali ratio greater than about two are glasses. Although quite soluble, these silicates can be dissolved satisfactorily only by steam under pressure, and so are sold as solutions as concentrated as practicable.

Use of silicates in soaps has several advantages: They neutralize acidity in soil and have a buffering action to maintain a pH favorable to maximum cleaning by soap. Silicates have a less corrosive effect at the same pH than other alkaline salts such as soda ash. They increase the volume and stability of foam of a soap solution; under certain conditions the stability has been increased tenfold. They increase the emulsifying power of soap solutions. Efficient rinsing in soft water removes silicates from fabrics and does not leave a deposit, as has sometimes been stated. Hard-water rinsing or insufficient rinsing might give rise to such a condition.

In Liquid Soaps

THE cloudiness which results when liquid soaps are stored in glass containers may be prevented by adding 0.07 to two per cent of a siliceous sodium silicate to the soap, heating to 70°C., allowing to stand for a week, cooling to 40°C. and filtering. The resulting liquid soap contains 0.022-0.016 per cent of soluble silica which prevents solution of the glass container.

Silicated Soap Manufacture

SEMI-BOILED process. Tallow and grease are heated to about 140°F. and the lye and silicate are then added. Some soap makers prefer to mix the silicate and caustic and add them together. A successfully used formula for this type of soap includes 316 pounds of tallow, 55 of coconut oil, 280 of 35° Bé. caustic soda lye, and 185 pounds of 41° Bé. 3.2 ratio silicate (N silicate).

Full-boiled process. Silicate is added in a crutcher to the kettle soap. A usual proportion for the crutcher charge is 200 pounds of kettle soap to 100 pounds of silicate, but larger amounts are used, particularly in bar soaps. As much as 800 pounds of a 41° Bé. 3.2 ratio silicate can be added per 1,000 pounds of most kettle soaps. Since the commercial silicate of this composition contains 37.6 per cent of solids, the resulting product contains 38.3 per cent of anhydrous soap, 16.7 per cent of anhydrous sodium silicate solids, and 45 per cent water.

The presence of more than about 25 per cent of an anhydrous siliceous silicate in a powdered, granular, chip or spray-dried soap may result in the formation of some insoluble matter on prolonged exposure to air. This rarely occurs for mixtures of soap and silicate only, but may in the presence of carbonates and phosphates.

Effective Crutching

THE most effective crutching temperatures for silicate-soap mixtures vary with the type of soap stock, moisture content, efficiency of mixing, and nature of silicate. The temperature must be just high enough so that the mixture is sufficiently fluid to flow freely and permit good mixing. Too high a temperature may cause separation into two layers. Soaps containing a large proportion of tallow or other high titre fats are satisfactorily crutched at 160-70°F., grease and rosin soaps at 140°F. Heating the silicate solution before mixing with the soap has been found to be helpful. When a smooth homogeneous dispersion has been obtained, the mixture should be gradually cooled and discharged from the crutcher at as low a temperature as is consistent with clearing the apparatus. In order to minimize the possibility of highly silicated soaps separating in the frames, they should be cooled as rapidly as practicable.

Artificial cooling of the frames, or cooling by extrusion of the mixture through a water-cooled orifice such as that on plodders for making milled soaps, should be helpful. The mixture may also be cooled rapidly by passing it through a water-jacketed screw conveyor. Usually special cooling is not necessary.

Mechanics' Hand Soap

A MECHANICS' hand soap is made by preparing a paste from stock containing coconut oil, 200 parts of water, 25 parts of 41° Bé. 3.2-ratio silicate, 10 of glycerine, and 5 parts of perfume. This is mixed with 150 parts of pumice or sand. The silicate forms

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Fatty Acids and Silicates

AT the present time there is a trend in the soap industry toward the manufacture of soaps from fatty acids rather than fats. The more alkaline silicates can be used without addition of caustic to neutralize fatty acids, with formation of a silicated soap. Silicates with a silica to alkali ratio of 2.5 or less should be used and care taken that the final ratio is below 3.9 and preferably below 3.0. Sesqui- and metasilicate should be particularly suitable. Although less alkaline than caustic soda, silicates are better wetting and emulsifying agents, so that the rate of reaction in the two-phase system may not be very different.

Potash Soap

POTASSIUM silicates may be used in preparation of liquid soaps. A commercial 30-40 per cent potash coconut-oil soap solution can be mixed in all proportions with a commercial potassium silicate containing 39.4 per cent of solids with a silica to potash (K_2O) ratio by weight of 2.10. Mixing up to 25 per cent of this silicate with a liquid soap may result in an improved detergent at lower cost. R. C. Merrill, *Soap, Perfumery, Cosmetics 21*, 904-8 (1948).

Tall Oil in Soap

A new product, "Modiphat 145," is formed by reacting the rosin fraction of tall oil with glycerine to give a pale colored, semi-solid plastic material. This is tacky, stable, unaffected by humidity changes, and has a solubilizing action. Its low cost gives promise for use in liquid sanitary soaps, dry cleaning soap, and soap chips. *Glycerine Facts*, December 1948.

Liquid Soap

Interest in addition of a potassium silicate to liquid soaps to influence viscosity and to provide increased detergency at lower cost led to the study of the solubilities of potassium laurate in aqueous potassium silicate solutions. The particular potassium silicate used had a silica-to-potassium oxide ratio by weight of 2.04, corresponding to the molecular formula $K_2O:SiO_2$ of 1:3.21. The work demonstrated that a liquid soap containing 33 per cent of soap corresponding to potassium laurate, can be mixed in all proportions with a commercial potassium silicate containing 38.7 per cent of solids with a silica to alkali ratio as given. R. C. Merrill, *J. Phys. & Colloid Chem. 52*, 1143-6 (1948).

Semimicro Soap Analysis

A semimicro procedure for the determination of borax in soap is based on the insolubility of strontium metaborate in excess of strontium chloride solution. The strontium metaborate is acidified and the liberated boric acid titrated. E. W. Blank and M. R. Griffin, *J. Am. Oil Chemists' Soc. 25*, 327-8 (1948).

DETERGENT EVALUATION

THE efficiency of soaps and synthetic detergents was studied by means of Launder-Ometer tests. Comparative results were obtained with 15 soaps, one soap powder, and 35 synthetic detergents. Detergents were used as received and varied in their content of active ingredient. In general, both soaps and synthetics removed more soil at 60°C. (140°F.) than at 40°C. (104°F.) Synthetics were less effective in distilled water than soaps. In hard water the synthetics in a majority of cases were more effective than the soaps, especially at concentrations lower than 0.35 per cent.

Soap Results

At 60°C. the soap used as the standard had approximately the same soil-removing efficiency at 0.15 per cent in distilled water as at 0.25 per cent in 150 p.p.m. hard water, and at 0.35 per cent in 300 p.p.m. hard water. At a concentration of 0.25 per cent, this soap was 72 per cent as efficient in 150 p.p.m. hard water as in distilled water, and 31 per cent as efficient in 300 p.p.m. hard water as in distilled water.

Detergent Results

A fatty acid amide sulfonate and a polyglycyl ether were both more effective at 60°C. than at 40°C. The polyglycyl ether was equally efficient in hard water and distilled water. Both of these types of detergents were more efficient than an alkyl aryl sulfonate and a sulfated glyceryl ester, although the per cent of active ingredient in all four was approximately the same, about 25-35 per cent.

In 300 p.p.m. hard water at 60°C. a polyglycyl ether containing 27 per cent of active ingredient gave far better cleaning than four other types of synthetics. It was much better than soap under these conditions up to a concentration of 0.4 per cent, when soap reached the same level of cleaning efficiency; at concentrations above 0.4 per cent, soap was the more efficient. Under the same test condi-

Detergent	*Nature*	*Active ingredient %*	*% Cleaning in 300 p.p.m. hard water Compared with Soap in Distilled Water*
Soap, standard	Anionic	92.5	31
Soap powder	"	6.8	25
Sodium lauryl sulfate 3r	"	38.2	40
Sodium lauryl sulfate 5r	"	18.7	53
Alkyl aryl sulfonate 5r	"	31.6	35
Sulfated glyceryl ester 1r	"	29.6	28
Fatty acid amide sulfonate 2r	"	30.4	31
Cetyl trimethyl ammonium bromide	Cationic	98.8	33
Polyglycyl ester 2r	Nonionic	14.1	75
Polygylcyl ether 2	"	27.4	71
Water only			14

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tions sodium lauryl sulfate and a fatty acid amide sulfonate were next below the polyglycyl ether in washing efficiency. These two showed about the same results throughout the whole concentration range; they were better than soap up to a concentration of about 0.3 per cent. Under the same conditions a sulfated glyceryl ester and an alkyl sulfonate gave the poorest results of the five synthetics; these two synthetics were approximately similar in washing action and were about the same as soap up to a concentration of about 0.27 per cent; at higher concentrations, soap was more effective.

Results with different types of detergents given in the accompanying table (p. 79) were obtained in 300 p.p.m. hard water at 60° C. at a concentration of 0.25 per cent, based on 100 as the value obtained for the standard soap at the same concentration but used in distilled water.

The soap powder, sodium lauryl sulfate 5r, and polyglycyl ester 2r were built with 15 per cent or more of alkaline salts such as soda ash. The letter "r" on the sample number means that the product was purchased retail under some brand name.

The results in the table show that the per cent of active ingredient did not necessarily show any correlation with washing efficiency, and confirm the effectiveness of builders in detergent products. Polyethylene ether condensates were the most efficient agents in hard water, among those tested. M. S. Furry, V. I. McLendon, and M. E. Aler, *Am. Dyestuff Reporter* 37 P751-9 (1948).

Action of Synthetics

Some synthetic detergents resemble soap somewhat in their relationships in solution. For example, "Mersolat," RSO_2Na, and "Igepon," $R_1COOR_2SO_3Na$, dissolve in water with the formation of ions. "Igepal," which is a condensation product of 10-20 molecules of ethylene oxide with hydroxyl groups making it a high molecular-weight alcohol, dissolves in the molecular rather than ionic state. The former compounds owe their water solubility largely to the hydrophilic end groups of neutralized sulfonate, while the latter owes its water solubility to a multiplicity of oxygen groups scattered throughout the molecule, plus one or two hydroxyl groups. The solubilizing groups in all of these compounds are more effective in that respect than the carboxyl group in soap, so that the critical saturation point of the synthetics is higher than that of soap. Therefore higher concentrations are required in the washing process than when soap is used.

As in soap solutions, the synthetics form aggregates but the size of these is smaller than in soap solutions of the same concentration. "Igepon" shows the greatest degree of dissociation of any synthetic detergents studied and in the concentrations used in practice undergoes scarcely any micelle formation. Formation of large micelles has not been studied comprehensively for the synthetics. It is probable that in aqueous solution two molecules of "Igepal" combine, with their hydrophobic ends together, and with the hydrophilic ends extending away from these at an angle. The oxygen atoms in the hydrophilic chains would attract water molecules, which probably align themselves to form a layer and gives a definite hydrate structure. In the solid condition the molecules of "Igepal" will not be hydrated to the same extent and probably two molecules are associated but extend more or less in a straight line. Ilse Zeising, *Seifen, Ole, Fette, Wachse* 74, 217-18 (1948).

Nitrated Kerosene

A new method for the solvent scouring of wool uses a nitrated kerosene called "Fialasol," developed by Fred Fiala, Inc., Cleveland, Ohio.

Efficiency Study of Builders in Hard Water

EXPERIMENTS were made to study the detergent efficiency of builders plus soap, using the concentrations of builders found experimentally to give maximum water-softening action. Addition of builder before the soap, and with the soap, was made. Detergent efficiency was determined from Launder-Ometer washings of standard soiled flannelette, followed by reflectance readings.

The efficiency of washing with 0.5 per cent of soap in 300 ppm. hard water, both alone and in the presence of builders, was as follows:

Detergent	*Washing Efficiency*	*Efficiency Index*
Soap & sodium hexametaphosphate	92	18
Soap alone	78	—
Soap & trisodium phosphate	71	7
Soap & tetrasodium pyrophosphate	71	3
Soap & sodium metasilicate	58	1
Soap & soda ash	48	0.5

The figures in the first column are based on a value of 100 for results with 0.5 per cent soap alone in distilled water. The same concentration of soap in 300 ppm. hard water was only 78 per cent as efficient. The figures in the second column are based on both washing efficiency and concentration. The efficiency index was obtained by dividing the washing efficiency by the number of equivalent weights of builder that reacted with one equivalent weight of hardness in softening the water. Results were the same whether the builder was added before the soap or with the soap.

Ash determinations on sample fabric washed 10 times, showed that the amounts of ash left by the different builders decreased in the following order, Soda ash, sodium metasilicate, trisodium phosphate, tetrasodium pyrophosphate, and sodium hexametaphosphate least.

Under the test conditions, the builders in concentrations capable of giving maximum water softening did not improve the washing efficiency of 0.5 per cent soap in 300 ppm. hard water, with the exception of sodium hexametaphosphate. A concentration of 0.23 per cent of soap appeared to be the amount necessary to precipitate this degree of hardness. M. W. Foster, J. S. Roberts, and J. B. Brodie, *Canadian J. Research* 26F, 76-85 (1948).

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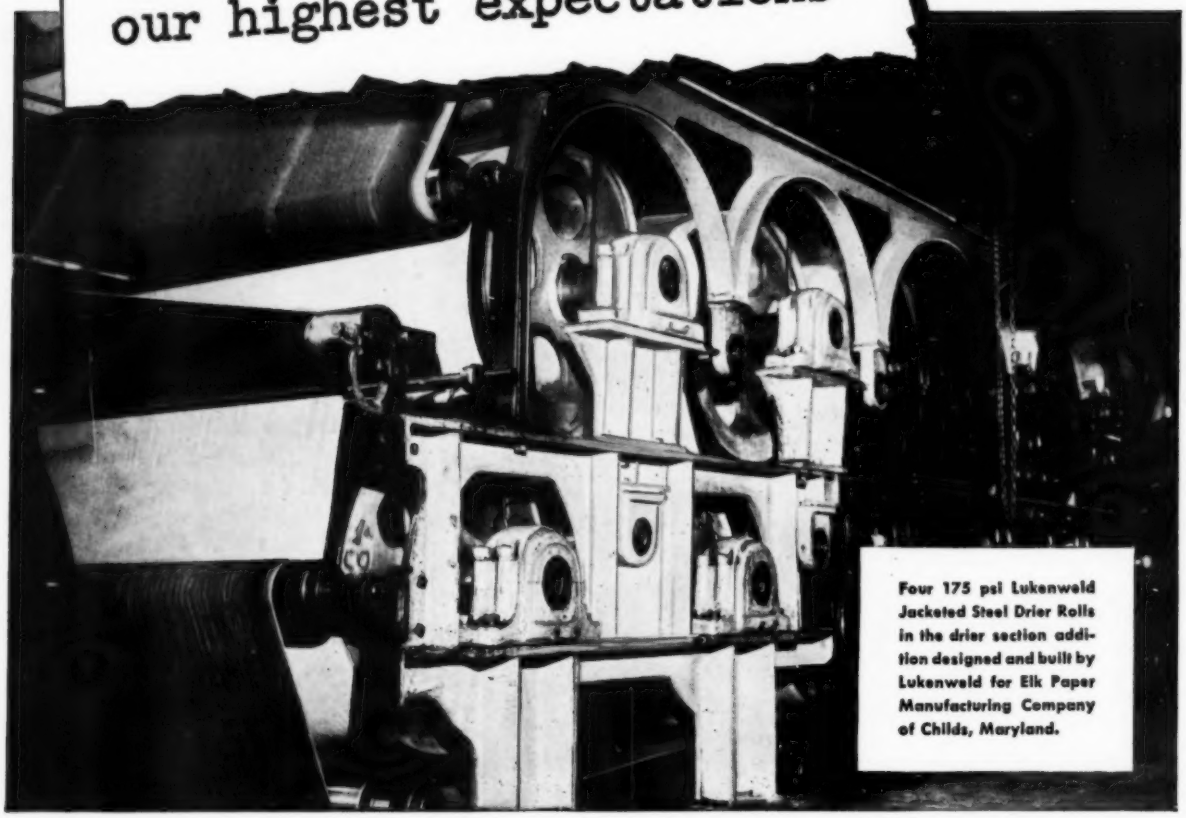

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PRODUCTION CLINIC

By E. G. THOMSSEN, Ph.D.

WHEN we speak of business ethics we are normally concerned with ethical considerations in the marketing, rather than in the manufacture of products. We are used to thinking of business ethics in connection with buyer and seller relationships, one's attitude toward and consideration for one's competitors or the buying public, unfair trade practices, exaggeration in advertising or similar aspects of business dealings which are concerned with sale of products rather than their actual production.

But, as some of us apparently forget sometimes, morality in business applies also to manufacturing methods and procedures, even though business ethics governing the production phase of a business are not given as much consideration as in their application to sales. It is imperative that the same high ethical standards be followed in the production end of a business as in sales and advertising. It is not enough to turn out well made products of good quality materials; it is necessary also to be guided by a system of ethical norms in approaching other problems of production.

An area in which morality in business has brought about a revolutionary change in recent years is that of labor-management relations. In its early stages, production executives found it difficult to adjust themselves to the growing power and importance of unions. At first there were abuses on both sides. Fortunately, now in many cases both labor and management are beginning to realize they are partners and that if our industries are to remain busy and prosperous there must be a coordination of efforts on both sides. Recently the writer saw at first-hand a concrete example of closer cooperation between labor and management. We were observing the operation of a new automatic line that was installed to reduce labor costs in a unionized plant.

When automatic production lines were first introduced in industry some years ago they were a cause of considerable friction between labor

DR. THOMSSEN

and management. Labor feared that machinery might eventually replace most of the production employees in manufacturing operations, and therefore refused to cooperate in obtaining the maximum production efficiency from these new labor-saving devices. Management often installed automatic production line equipment to show how these machines could put people out of work, or as a threat to head off further demands for higher wages.

The particular line referred to was being operated by the union's vice-president and the shop steward. Both were mechanically inclined. They requested their foreman's permission to do some overtime work to put into effect an idea they had for increasing the output and eliminating expensive shut downs due to mechanical difficulties of the line. The request was granted. Within a week the improvements of their invention were incorporated and the line's production was stepped up by about 25 per cent. When asked why they took this attitude they stated that unless the company's product could compete in the open market, its employees could not hope to have steady work. It was more important to these men to step up production by 25 per cent without increased labor costs, even though this reflected itself in fewer working hours, than to jeopardize the future employment of many. Such an attitude indicates a change in the ethical outlook of labor.

Another big change in business customs has occurred in the attitude of the boss, even the "big boss," toward his employees. In past years the boss was somebody who stood on a pedestal from which he ruled absolutely if he desired. The factory employees feared him as he made his frequent or, more often, infrequent rounds of the plant. It was a thrill if he deigned to speak or even smile at one of the more fortunate workers. They expected criticism or reprimands rather than words of encouragement and good will. They feared discharge. Unfriendly and dictatorial executives are no longer tolerated and have been replaced in many cases by a new type. Business ethics in this regard have changed. The modern successful boss, though he directs two or two thousand employees, must create the proper atmosphere in which to run a smooth working plant. Employees no longer fear dismissal at the whim of the boss. Their union protects them against this. The up-to-date employer uses more efficient tactics to get the best efforts out of his employees. A big boss today must know his job and his personnel psychology well. He no longer drives employees—he leads them. He is fair in all his dealings; approachable at all times friendly, yet authoritative; knows the ability of the people under him; metes out promotions or demotions solely upon merit; works in the interests of his men for deserved benefits and wage increases when they are warranted and inspires his men to improve upon manufacturing methods, giving credit due to such refinements in a substantial way. Such bosses are doing much to elevate business morale in plant operations.

Another area in which business morals or customs have undergone considerable constructive transition is in the production department's attitude toward regulatory legislation. In

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the past when government stepped in to pass laws to govern business customs, it was resented. Protest meetings were held, attorneys were engaged to fight such legislation in the courts and loopholes were sought to evade the statutes and regulations. This custom has changed. Now we find government regulatory officers and the scientific and production staffs of businesses cooperating to work out mutually satisfactory methods to enforce legislation smoothly. A good example of this has been the smooth manner in which the new Insecticide Act has been operating. One has heard very little criticism of the way this law is being put into effect. Government officers have gone out of their way to be constructive in getting the numerous items properly compounded and labelled for the future welfare of the entire industry. Twenty- five years ago such teamwork would not have been possible.

Business customs, morals or ethics are on the upgrade in many branches of business. The examples quoted above which are frequently experienced in many branches of industry, are barometers that indicate fair weather is ahead of us in problems that have been troublesome and irritating in the past.

Detergent Names

READING the names of the new detergents that are flooding the market, one is struck by the number that take their trademarks from marine terms. We wonder who started this trend. On reading such names as "Tide," "Surf," "Swirl" and "Breeze" on detergent packages and on seeing these motifs carried out in label designs, a definitely nautical atmosphere is created. There are several terms pertaining to the waters remaining. Judging from the number of new detergents that come to the market these will soon be exhausted. Maybe soapers will have to turn to the sky for new names when this occurs.

Cordura Belts

E. I. du Pont & Co., Wilmington, Del., are giving much publicity to the use of their "Cordura" for V belts. The material is a high tenacity Rayon yarn that posseses more strength than yarn made from natural fibers. "Cordura" strands are made up of a continuous filament that prevents belt slippage in V belts made up from shorter pieces. Stretching of the belt is also reduced, resulting in fewer take-ups. V belts made from "Cordura" are said to be stronger and more efficient. The du Pont Rayon Division will supply belt data on request.

Colored Concrete Floors

VERY often it is desirable to beautify concrete floors in certain parts of a building. To do this effectively has been a troublesome problem in past years. A. C. Horn Co., division of Sun Chemical Corp., is producing "Colorundum," a dry powder that has high coloring power. It is used in laying concrete slabs, being adding directly to the topping and then trowelled as usual. The finished floors simulate tile in appearance and durability.

More Wetting Agents

WYANDOTTE Chemicals Corp. of Wyandotte, Mich., is offering a new, 28-page booklet on properties and uses of "Kreelon." The material is a new wetting agent that acts in acid, neutral or alkaline media. It has good detergent value. "Kreelon" penetrates, spreads, emulsifies and disperses during its wetting action. The manufacturers recommend its use in household cleaning compounds and insecticides to do an efficient faster job.

Sharples Chemicals, Inc., Philadelphia, are featuring their "Nyon 218," a liquid surface active agent of the non-ionic type. It can be compounded with soap or cationic surface active agents to improve their properties in many respects. It gives results over wide variations of pH and temperature. Applications of "Nyon 218" are widely diversified. Samples and further information may be had by writing to the company.

New Stokes Vacuum Dryers

THE redesign of many basic features of rotary vacuum dryers, manufactured by the F. J. Stokes Machine Co., Philadelphia, has materially increased their operating efficiency. The dryers are now available in nine standard sizes from one cubic foot up. Maximum mixing action and complete discharge of the material when the operating cycle is finished are assured through new spiral type agitators. Maximum contact of material with the heating surface of the shell is accomplished by improved construction of agitator blades. Heating both shaft and agitator arms improves performance and provides up to 30 per cent more heating surface. This heating feature is standard on Stokes' models of 50 cubic feet working capacity or larger and can be furnished on smaller models.

Other features of the redesigned Stokes rotary vacuum dryers include: inverted refluxing type dust filters; rotary type vacuum seals, permitting operation in the low millimeter range; and, quick opening discharge doors of flush-plug construction.

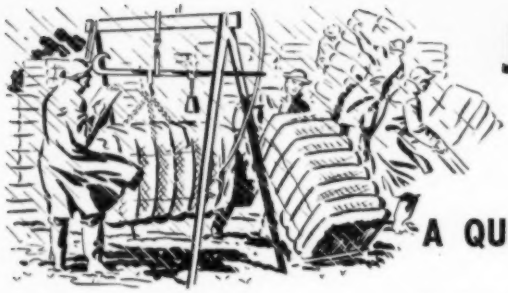
Complete data on the Stokes rotary vacuum dryers can be obtained by writing F. J. Stokes Machine Co., Philadelphia 20, Pa.

Batch Weigher

A NEW, simplified batch-weighing arrangement which it is said achieves accuracy of operation without elaborate equipment or devices subject to constant maintenance troubles because of wear is offered by Hagan Corp. of Pittsburgh, Pa.

This batch-weighing system consists of a conventional scale-type suspension hopper with a canvas connection at the bottom. The hopper is completely supported by a double-yoke arrangement, linked to a long counter-weighted lever. This in turn is linked to an integral-beam Hagan "ThrusTorq" an air-operated weighing device. The "ThrusTorq" measures the full weight of the material in the hopper. It is connected with a mercury manometer equipped with an adjustable contact that can be set at any desired weight point on the manometer scale. As the conveyor empties into a weigh hopper, the mercury rises in the contacting manometer until it reaches the indicated

(*Turn to Page* 98)



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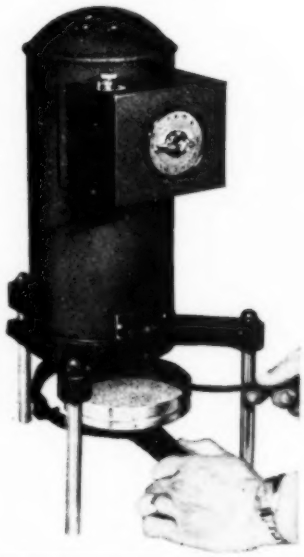

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SOAP PLANT OBSERVER

By John W. McCutcheon

SYNTHETIC detergents continue to receive a great deal of attention from soap makers in general as may be judged by the important place they occupied on the program of the meeting of the Association of American Soap and Glycerine Producers in New York last month. More and more, studies of surface active chemicals are shaking themselves down to three basic classifications: Anionic, cationic and nonionic. A recent survey indicates that the cationic account for about one percent of the sales volume and four percent in terms of value; non-ionics about nine percent of the volume and 16 percent of the value; while anionics account for about 90 percent of the volume and 80 percent of the value. About 50 percent of the sales volume of anionics is estimated to be alkyl aryl sulfonates. Incidentally, a few recent notices in the trade journals have made pointed mention of the "oxo" process for the making of fatty acids, alcohols and aldehydes from petroleum and other fractions. Pilot and large scale plant production is either under way or on the drawing boards of several large companies. If I were Drew Pearson, I would be tempted to predict that within the next five years, the whole face of the synthetic detergent retail business may be lifted by the oxo process. At least one large organization in this field has been investigating its possibilities.

One of the more recent retail detergents to come on the market apparently is not just another run of the mill product in a new package, but it represents an entirely new approach. The results are proving excellent. It is not known whether the recent slow market has anything to do with it or not, but a large producer of anionic synthetic detergents is contemplating entering the cationic surface active field with a germicide. This is most unusual considering the volume of business involved.

Some months ago (November)

it was stated in this column that the lack of standardization of analytical methods for surface active compounds was a serious drawback to their proper utilization. Recent studies have shown that because of this state of affairs, it is not possible to compare data even on such basic determinations as interfacial tension or spreading coefficients. In this regard a paper on the "Evaluation of Surface Active Agents" by J. C. Harris, ASTM Bulletin #140, May, 1946 is well worth reviewing and should be available to anyone using these compounds.

Engineering of soap plant equipment, like engineering in any other industry is a process of evolution. Automobiles today differ from those of yesterday all along the line. Probably no better example of engineering progress is so well illustrated as in the automotive industry. Yet in plant equipment design, many users insist on specifications or models which have been outmoded. A few years ago, a petroleum refiner decided to put in a vegetable oil deodorizing plant. For some reason, he economized on engineering design in this field and wound up with a stainless steel shell more than one inch thick. Outside of actual cost, this represents an inexcusable waste of a hard-to-get item. Another instance comes to mind in the case of a home-made bar soap dryer designed from a picture in a book on soap making. Where half-inch insulated metal clad walls could have been used, they were made one inch thick for "safety." Where "L" supports 1½"x1½"x1¼" could have been employed, they were made 2"x2"x⅜" for the same reason. The final cost was out of all proportion to the importance of the machine and a clumsy piece of operating equipment was installed in addition. Another example is the soap maker who bought a two-way screen for his soap tower instead of the three-way type generally used for fines, coarse and product. Investigation showed that the purchaser was influenced by what he had seen in operation at another plant ten years previously. If plants are large and have engineering staffs of their own, there is no problem. The smaller plant, in which the engineer must divide his energy between a multitude of diverse jobs does not have the time to keep abreast of technical advances. In such cases it is a most wise policy for management to recognize a man's limitations and to provide him with the necessary outside help, to modernize his ideas.

A recent visit to the plant of Lukens Steel Co. at Coatesville, Pa., was very informative. Of particular interest is their surface treating of stainless clad plate by the sodium reduction method of du Pont, to give a satin finish. Also noted were their facilities to spin heads up to 20 feet or even more, and their methods of rolling stainless clad to almost any specification. In respect to this last item, of special interest to soap makers is a new type 318 stainless which contains just a slightly higher percentage of molybdenum than the ASTM type 317. It is claimed to be superior for still pot design for fatty acid distillation.

New Alsop Tank Line

Alsop Engineering Corp., Milldale, Conn., recently announced a completely new line of stainless steel

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The Stokeswrap Packaging Machine forms, fills and seals the package, taking the printed or imprinted web from the roll — at speeds from 50 to 120 packages per minute, depending on size of package, kind of web and nature of material.

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Left: New mixing tanks recently announced by Alsop Engineering Corp., Milldale, Conn. The line is available in sizes from five to 250 gallon capacities. Of all stainless steel construction, they are easy to clean.

storage and mixing tanks. The new tanks, featuring easy to clean surfaces, are constructed with sloping bottoms for complete draining; solid 16-gauge stainless steel construction—one piece welded, all rounded corners and crevice-free; side outlet nipple that aids in fast draining; low sides for easy loading; and stainless steel legs and feet. New mixing units have the mixer permanently mounted above the tank. A complete line of the tanks is carried in stock, in sizes from five to 250 gallon capacities. Valves, faucets and liquid level gauges of various types and made of numerous metals and alloys are available for use with the new tanks.

New Fritzsche Price List

Fritzsche Brothers, Inc., New York, recently issued a 12-page catalog and price list of their line of essential oils, aromatic chemicals, perfuming material specialties and certified colors.

Baird & McGuire List

Baird & McGuire, Inc., Holbrook, Mass., recently issued their price list for 1949 covering their line of disinfectants, weed killers, insecticides, moth preventives and specialties. In addition, a label price list was issued at the same time by the firm.

New Maschmeijer Catalog

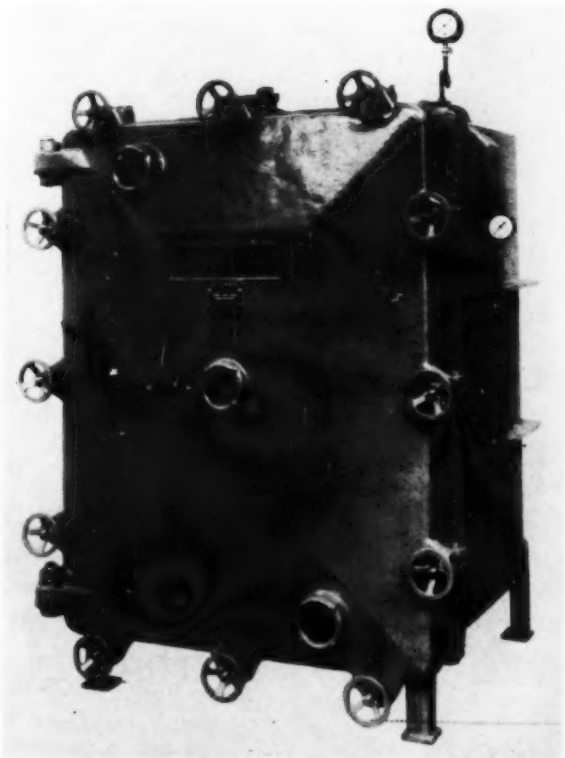
A. Maschmeijer, Jr., Inc., New York, recently issued a 40-page illustrated catalog and price list on its line of aromatic chemicals. In addition to black and white interior and exterior photographs of the company's plant in Newark, N. J., full color illustrations of a number of products are included in the 6 x 9 inch, plastic spiral bound booklet.

UP Freight Rate Booklet

A 62-page booklet of increased freight rates and charges was issued recently by the freight traffic department of Union Pacific Railroad Co., Omaha. A feature of the booklet is a map of the United States showing boundary lines of various increase territories. Other sections of the booklet, which is obtainable upon request, include alphabetical list of points showing increase group basis, chart showing ex parte 162-A and 166-B increases between various increase groups, alphabetical list of commodities accorded specific or maximum increases in master tariffs X-162-A and X-166-B, consolidated increase table "A" on commodities other than grain and except commodities on which maximum increases are provided, and increase tables for application to rates on commodities accorded specific or maximum increases.

Tall Oil Testing Folder

"Tall Oil Testing Methods," another in the series of folders being issued by the Tall Oil Association, 122 E. 42nd St., New York 17, was published recently.



Right: One of the new redesigned models of the F. J. Stokes Machine Co., Philadelphia, line of vacuum shelf dryers. Available in five chamber sizes, the line can be furnished in special metals. The dryers are built of welded steel. Shelves, with internal baffles, are arranged to provide uniform heat throughout the entire shelf area. The lower section of the vacuum shelf dryer is fitted with a drain gutter and outlet to permit cleaning of the unit without spillage.

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PRODUCTS AND PROCESSES

Dehydration of Castor Oil

Catalytic dehydration of castor oil is accomplished by using a Napthol sulfonic acid as catalyst. 2-Naphthol-6-sulfonic acid gives complete dehydration and 0.92 per cent of decomposition products. W. T. Walton, C. A. Coffey, and O. E. Knapp, to Sherwin-Williams Co U. S. Patent No. 2,429,380.

Peroxide Determination

In a new method the sample of fat or oil is dissolved in water plus methanol plus benzene. The peroxide is caused to react with ferrous sulfate, and the resulting ferric ion is determined colorimetrically with ammonium thiocyanate. Results were very satisfactory on old butter and old olive oil. H. Erdmann and F. Seelich, Z. *anal. Chem.* 128, 303-12 (1948); through *Chem. Abs.*

Water-hardness Test

Addition of tropeolin to water results in the precipitation of calcium and magnesium and a change in color of the solution. From the degree of change in color the hardness of the water may be determined by comparison with a standard color scale. I. Y. Sokolov and A. I. Komarova, Zavodskaya Lab. *13*, 753-4; through *Chem. Abs.*

Sulfonic Acid Neutralization

An improved process for neutralizing aromatic sulfonic acids is by mixing these with an alkali metal sulfite in the presence of an amount of water equivalent to 10-50 per cent of the weight of the aromatic sulfonic acid. The alkali aromatic sulfonate product is recovered. S. P. Miller, to Allied Chem. & Dye Corp. Canadian Patent No. 452,269.

New Detergent Use

Hydrochloric acid solutions containing thiourea and nitrogen-ring compounds—used to remove scale from boilers and heat-exchange systems—have definite rates of attack on steel. Addition of wetting agents lowers this rate of attack. When used alone in acid solutions, the wetting agents are not corrosion inhibitors. A partial explanation may be that the higher degree of wetting resulting from the addition of wetting agents brings about a reduction in the size of the hydrogen bubbles, and that this causes a decrease in the pitting type of corrosion.

Rosin Deriatives

Surface-active compounds are produced by reacting a rosin—which may also be hydrogenated or dehydrogenated—with a strong sulfonating agent and a compound selected from the group consisting of aliphatic alcohols and alkenes having at least eight carbon atoms. D. Price and E. L. May, to National Oil Products Co. Canadian Patent No. 452,540.

Alkyl Sulfates

Alkyl sulfates derived from secondary alcohols with 10-18 carbon atoms, are salted out of their aqueous solutions by caustic soda to yield a better clotted product than that obtained by salting out with sodium chloride or caustic potash. For example, 100 parts by weight of alkyl sulfate solution at 25 per cent concentration of active ingredient is mixed boiling with 500 parts by weight of 30 per cent caustic soda solution. The mass that separates is neutralized by fatty acid and worked into soap in certain quantities. Dobbelman, N. V. Dutch Patent 61,699.

Alcoholysis of Fats

Sunflower oil was heated with a solution of sodium hydroxide in methanol and allowed to stand. The glycerol was treated with strong sulfuric acid at room temperature and the precipitate filtered off. Methanol was distilled from the glycerol and the fatty acids were skimmed off. The yield of glycerol was about 94 per cent of theoretical, its concentration being 97-8 per cent and the ash content two per cent. More glycerol was recovered by extraction with water from the fatty esters, after distillation of the methanol. The esters were then saponified with strong alkali, giving a soap mass containing 50-60 per cent of fatty acids. Methanol was recovered by distillation from this mass, with 90-97 per cent recovery. G. L. Yukhnovskii and N. A. Kas'yanova, Trudy Khar'kov. Khim.-Ttkhnol. Inst. im. S, M. Kirova 5, 65-76; through *Chem. Abs.*

Hydrogenating Tall Oil

Tall oil having an acid number of 178, a saponification number of 184, an iodine number of 125, and a titer of 6°, was hydrogenated with three per cent Raney nickel at 30 atmospheres' pressure of hydrogen for two, three, and five hours, at temperatures of 75°, 150°, and 300°C., respectively. The finished products showed, respectively, acid numbers 165, 142, and 118; saponification numbers 182, 181, and 143; iodine numbers 62, 59, and 47; and melting points 55°, 57°, and 73°C. A temperature of 90° for two hours was adopted to obtain a good-colored product very satisfactory for making soap. The resin acids of tall oil are not notably hydrogenated even at 300°. E. Gordon and S. Ragot, *Bull. mens. ITERG* 1948, No. 4, 32-4.

Obtaining Oil from Seeds

Flax and sesame seeds, and babassu nuts are pressed in a mechanical screw press thus reducing the oil content of the press cake to 10-24 per cent. The resultant soft, porous press cake is granulated and subjected to solvent extraction with hexane. E. W. Schmidt and W. F. Webber, to Archer-Daniels-Midland Co. U. S. Patent No. 2,430,535.

Hydrogenation Catalyst

The mixture of carbonates obtained by adding soda ash to a solution of copper and nickel sulfates is used as a catalyst for the hydrogenation of fats at 185-90°C. C. Paquot, M. Demarcq, and G. Stroh, Bull. soc. chim. France 1948, 520-1; through *Chem. Abs.*

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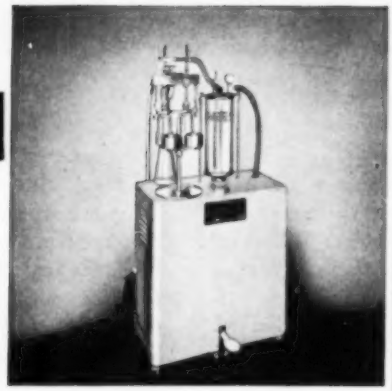

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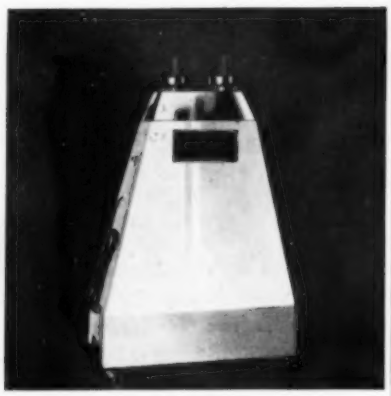

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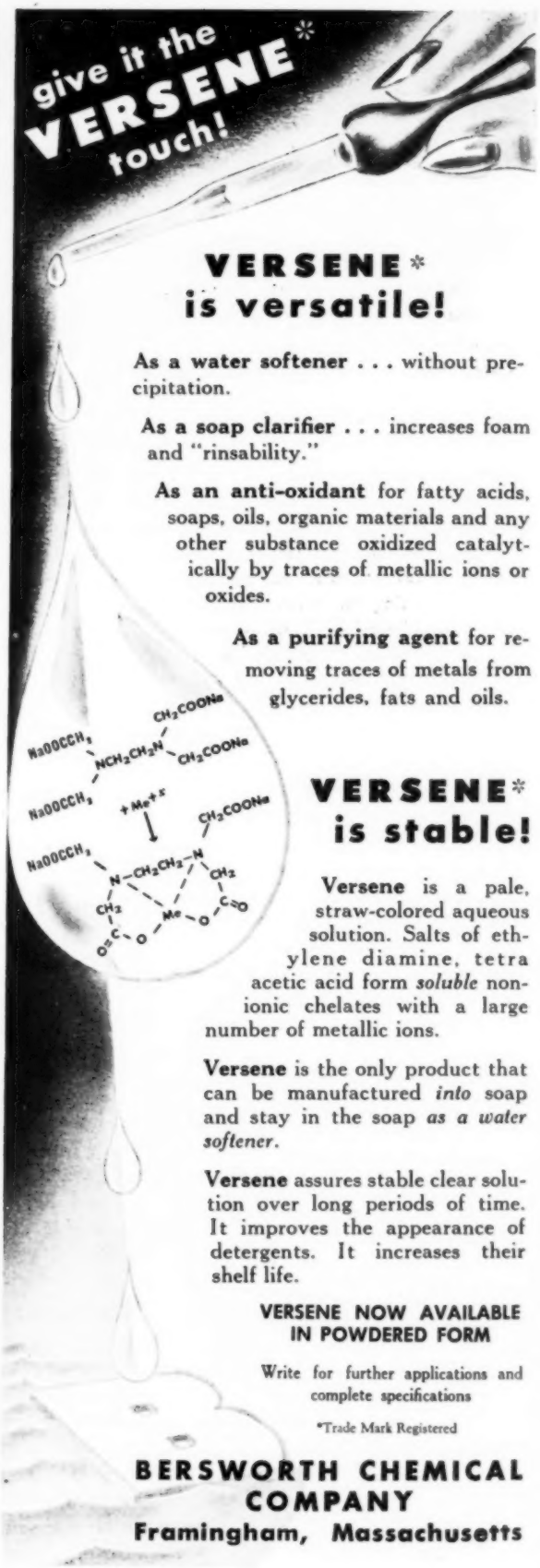

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No. 2,455,648, Method of producing an alkaline detergent, patented December 7, 1948 by Wallis R. Bennett, Midland, Mich., assignor to the Dow Chemical Company, Midland, Mich., a corporation of Delaware. The method of making a detergent composition is covered which comprises adding a material selected from the class consisting of zinc oxide and sodium zincate to approximately 76 percent aqueous sodium hydroxide and heating the resulting solution at an elevated temperature over 700° F. but below 830° F. to vaporize substantially all the water therefrom, mixing disodium orthophosphate into the heated solution, and then converting the entire mixture to the solid state, the said ingredients being in such relative proportions that the final composition contains at least 75 per cent by weight of sodium hydroxide and from two to 10 per cent by weight each of sodium zincate and trisodium orthophosphate.

No. 2,456,437, Nondusting soap composition and method for making same, patented December 14, 1948, by Gilbert De Wayne Miles, New York, N. Y., assignor to Colgate-Palmolive-Peet Company, Jersey City, N. J., a corporation of Delaware. The patent covers as a new article of manufacture, a non-dusting, free-flowing particulate soap comprising spray-dried soap particles including beads and fines having a dry coating of material from the group consisting of starch, gum and glue.

No. 2,456,727, Copper fungicides and process of producing same, patented December 21, 1948 by Alexander A. Nikitin, College Park, Ga., assignor to Tennessee Copper Company, New York, N. Y., a corporation of New Jersey. The process of manufacturing copper fungicides is patented which comprises reacting an aqueous solution of copper and aluminum salts with an alkali and a fatty acid soap, said copper salt being selected from the group consisting of copper sulphate, copper chloride, copper nitrate, copper fluoride, copper fluosilicate and copper lactate, and said aluminum salts being selected from the group consisting of aluminum sulphate, aluminum chloride, sodium aluminate, and normal aluminum acetate, said reactants being in the proportions of 100 parts copper salt to five to 30 parts aluminum salt to 0.5-3.5 parts fatty acid soap, alkali being added until the solution becomes approximately neutral thereby precipitating a basic copper-alumina-soap compound.

No. 2,457,025, Fungus-proofing composition, patented December 21, 1948 by Paul George Benignus, Belleville, Ill., assignor to Monsanto Chemical Company, St. Louis, Mo., a corporation of Delaware. The patent covers a fungus-proofing and water-proofing composition for the treatment of cellulosic substances comprising (1) a water-in-oil emulsion in which the ratio of water phase to oil phase is in the range of 1:4 to4:1, said emulsion having an oil phase comprising ½-five percent of a halogenated 8-hydroxyquinoline derivative selected from a group consisting of 5,7-dibromo-8-hydroxyquinoline, 5.7-dichloro-8-hydroxyquinoline and the copper salts thereof, two-10% of a modified alkyd resin made from a polyhydroxy alcohol and a modifying substance selected from the group consisting of fatty oil and fatty oil acids, said resin containing 20-40% of phthalic radical calculated as phthalic anhydride, said resin being soluble in mineral spirits, three-25% of a chlorinated diphenyl mixture containing 20-68% of chlorine and mineral spirits and (2) a resinous hydrocarbon-soluble condensation product selected from the group consisting of dimethylol urea resins, dimethylol urea ether resins, tetramethylol melamine resins and tetramethylol melamine ether resins.

SDMA MEETS

(*From Page* 42)

ment of Agriculture and the Department of Commerce in the matter of export and import fat and oil allocations. While the U.S.D.A. handled import allocations, the Commerce Department was responsible for export allocations. Both agencies worked together in these matters, and the Department of Commerce regularly reviewed and approved Agriculture recommendations for exports before their release.

Coconut oil and palm oil are being stockpiled by the government, but no figures on the size of these stocks are available. Coconut is being stockpiled for use in lauryl alcohol and synthetic rubber production, while palm is stocked for use in steel and in making tin and terne plate, wire drawing, etc. These purchases are made through the Bureau of Federal Supplies of the U. S. Treasury Department. In stockpiling strategic materials the government does try to keep industry requirements in mind, Mr. Prichard declared.

IN discussing the outlook for fats and oils supplies for the coming year, Edgar Burtis, senior agricultural economist, Bureau of Agricultural Economics, U.S.D.A., was optimistic, particularly in regard to the soap fats. Tallow, grease and lard should be in better supply than last year because of fatter, though fewer cattle going to market; a large pig crop raised during the fall of 1948; and more inedible tallow as a result of cattle deaths on western ranches during the January blizzards. The large corn crop in 1948 has helped produce heavier cattle and hogs. It is estimated, according to Mr. Burtis that the '48 fall pig crop was about eight percent larger than in 1947. The 1949 spring crop should be about 10 percent greater than for 1948, with the result that lard production for the year may be the largest since the war. The pig crop will be coming to market from April through September, with the bulk of it being received during the Summer.

Tallow and grease production during 1949 should be about 100 million pounds larger than in the previous year, and about the same as 1947. In comparison with pre-war years tallow and grease production is very large, running to about two billion pounds, as compared with 1.2 or 1.3 billion pounds pre-war. Because of the large supplies and reduction in tallow and grease prices, renderers will be affected. They may curtail their collecting operations in outlying districts. During the war and post-war years, when fats were extremely short, renderers had extended their collection areas to bring in every pound of material they could obtain.

The coconut oil situation,

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219 EAST NORTH WATER STREET

which is tied in closely with the world scarcity of edible oils, will improve in 1949, although copra and coconut oil will still not be as plentiful as in 1947, when 745 million pounds (oil equivalent) of oil were turned out. Last year, as a result of the shipping strike and typhoon damage in the Philippines, copra production and U. S. imports and production dropped from the previous year's figures. In addition, European nations, armed with ERP dollars, are competing with the U. S. for coconut oil for edible purposes. Little or no coconut oil is finding its way to soap kettles in Europe, as a result of shortages of edible oils. Copra production in the Philippines is expected to recover some of the loss suffered last year, but it is not known how much. Another factor, mentioned by Mr. Burtis, is the activity of guerillas in the southeastern, coconut plantation section of the island of Luzon. This activity is a threat to production.

Vegetable oil stocks are expected to be larger during the coming year, following the large oil seed crops harvested last fall. The outlook for vegetable oil foots, therefore, is very promising. It is believed production of vegetable oil foots will rise to about 240 million pounds in the 1948-49 crop year, which represents an increase of about 10 percent over production during the previous crop year.

As for demand for soap, this rests ultimately with consumer incomes. While the latest statistics fail to show any decrease in purchasing power, the statistics are two months late in being issued, and the situation may have altered by this time. There are some signs of a minor recession. But the year-round employment plans under which some of the large soap firms operate insure a fairly steady output of soap in any case, independent of fat and oil price changes and of changes in the trend of sales. More soap was made than sold in the first quarter of 1948, and more sold than was produced in the third quarter, according to Mr. Burtis, who based this statement on figures published by the Association of American Soap & Glycerine Producers, Inc.

No further inflation is contemplated in the near future, and with bssiness activity slightly on the down side, consumer demand for soap is not expected to increase perceptibly in the next few months. Sales of synthetics, which represented 10 percent of total soap sales in 1948, according to Mr. Burtis, give signs of increasing during the next year, which should further ease the burden on supplies of soap fats and oils. There should be about a five percent increase in total supplies of fats and oils in 1949, as against 1948, the speaker said.

"Eliminating Unfair Practices by the Conference Procedure," the next address, was presented by W. B. Snow, assistant director of the Trade Practice Conference Division of the Federal Trade Commission, Washington, D. C. He sketched in the legal background for the F.T.C. and explained the differences between "Group 1" rules under which individual firms may be cited by the F.T.C. for statutory violations, and "Group 2" rules, which relate to trade practice rules covering an industry's trade practices,

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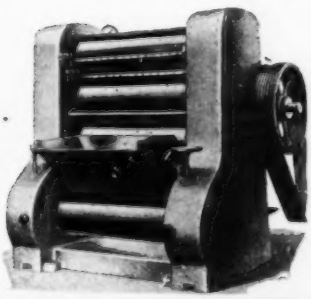

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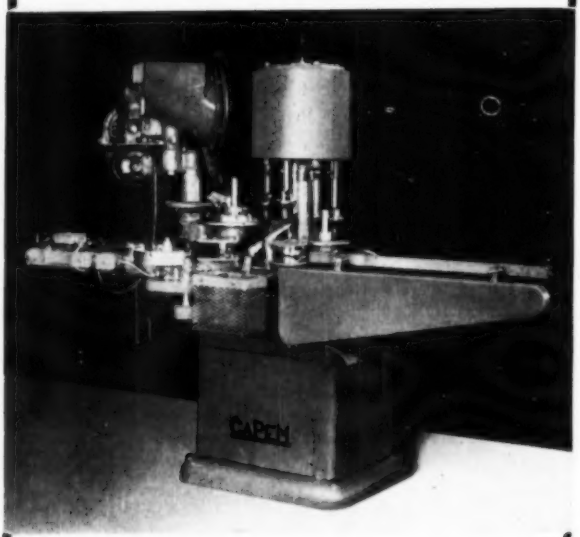

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which are promulgated after consultation between industry members and the Commission.

Raymond Dickey, chief counsel, Small Business Committee, U. S. Senate, the next speaker, discussed, "Small Business' Need of Adequate Representation at Washington." He warned of the danger of government control of an industry in which a few large units are completely dominant. He declared that a seller's market is bad for the consumer and that the small or medium size firm acts as a balance wheel in our economy.

Percy C. Magnus, president of Magnus, Mabee & Reynard, who spoke following luncheon, gave his views as to the "Economic and Political Outlook as a Business Man Views It." In his talk he stressed the need for business men to work harder than ever before at their jobs. As for the political outlook, he stated that things do not look good under the present administration for the free competitive enterprise system. He stated that the present administration is more of a labor government than that of Ramsey MacDonald in England during the twenties.

In spite of fears of a depression, the economic outlook for 1949 is very bright, he said, counselling the audience to regard new government programs as new problems to be faced. The present government will not wreck or harm business, Mr. Magnus pointed out, recalling various measures in the past that were termed "socialistic" at the time, but which are now accepted as part of our system. America is a robust organism, he stated, adding that the country was not built by weaklings. Its growth, he continued, came only under the conditions of a buyers' market.

Following Mr. Magnus' address, a round table discussion of questions relating to formulation and manufacture of soaps and detergents followed.

———•———

New Soap Whitening Agent

Two new chemical compounds that give a gleaming whiteness when used as whitening agents in soap were announced recently by Edwal Laboratories, Inc. Chicago. The new products, derivatives of phloroglucinol, are 5, 7-dihydroxydimethyl coumarin and 5, 7-dihydroxy-4-dimethyl coumarin. Although not yet commercially available, the new compounds can be had in research quantities.

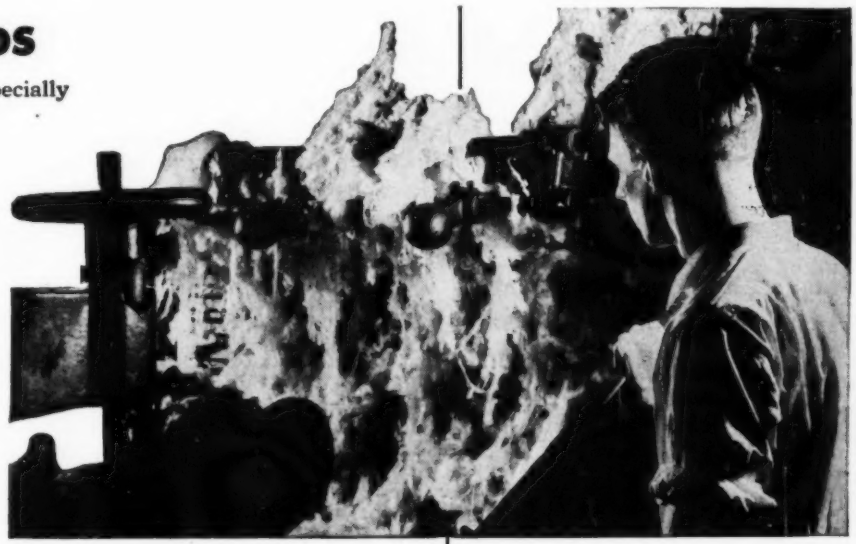
———•———

New Wetting Agent

"Santomerse 30-X," a new, low-cost liquid wetting agent and detergent of the alkyl aryl sulfonate type, was announced recently by Monsanto Chemical Co., St. Louis. The new compound is a pale-lemon, viscous fluid. It is a clear, light colored solution containing approximately 30 percent solids. The solids content is made up of approximately 85 percent active alkyl aryl sulfonate and 15 percent sodium sulfate. "Santomerse 30-X" is recommended for wet processing of textiles and other applications where surface tension reduction and quick wetting are desired.

CRESYLIC ACIDS

Barrett* Cresylic Acids are especially valuable in textile scouring compounds for removing natural greases and paint from raw wool. These standardized mixtures of tar acids, including cresols, blended to meet particular commercial requirements, are also widely used in the production of commercial disinfectants and metal-cleaning compounds.



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Soap Export Controls Cut

Export controls on all soaps, inedible tallow, greases, soap stock, and numerous inedible grades of fatty oils, with the exception of shipments to European countries, were removed by the U. S. Department of Commerce effective February 7th last. Through its Office of International Trade, the Department stated that these products were removed from the list of items requiring export licenses because of the materially improved supply in the United States. They also noted that oil and fat prices in the U. S. have been lower than at any time since the removal of OPA price ceilings and that the outlook for increased domestic production during the next six months is good.

Some of the materials listed as now being exempt from export licenses include all soaps and soap products, fish oils, linseed oil, olive foots, inedible tallow, greases, stearic and oleic acids, fatty acids of vegetable origin, vegetable oil foots and soap stocks. All shipments of these items to Europe still require licenses.

On February 10, controls on edible oils and fats were lifted, and it was decided to discontinue IEFC allocations of fats and oils.

Myers Joins Penick

Charles A. Myers, formerly president of Dodge & Olcott, Inc., New York, who retired last July 1, has re-entered the essential oil and perfuming materials field as vice-president of S. B. Penick & Co., New York, as managing director of their essential oil division. Mr. Myers has been connected with essential oil and aromatic chemical production and marketing during his entire business careers. S. B. Penick & Co. also announced that Arthur Gogarty, formerly with Givaudan-Delawanna, Inc., New York, had become associated with the sales department of their expanding essential oil division.

Boston Bims Dinner

The BIMS of Boston held their annual winter party and dinner at the Weston Country Club on Wednesday evening, February 9. A special roast beef dinner was served to a capacity gathering following which bowling and card games made up the balance of the evening. W. E. Johnson of U. S. Industrial Chemicals, Inc., recently elected 1949 Boston BIMS chairman, acted as master of ceremonies. Ed Aldrich of United Drug Co., BIMS treasurer, acted as chief financial and management potentate for the occasion. The 1949 Boston BIMS golf and activities schedule will be announced at a later date by Chairman Johnson.

PRODUCTION CLINIC

(*From Page 85*)

weight and the tripping contact stops the conveyor. The flexible canvas connection at the bottom of the weigh hopper does not interfere with weighing accuracy of this set-up.

Safety Air Soap Press

HOUCHIN Machinery Co., Hawthorne, N. J., is offering a new semi-automatic soap press that should have ready acceptance by soapers. There is hardly a soap plant where fingers have not been clipped off by the use of foot power soap presses. This new soap press will handle any kind of soap cake safer, faster and easier. It will give single or multiple strokes and press soap or other plastic substances into perfect cakes.

The press is operated entirely by the hands. Before the compressed air ram operates, it is necessary to use both hands or the air ram remains locked. All foot controls are eliminated. Pressures up to 2500 psi are obtainable. Houchin invites those seeking information to write to them for a description of the new press.

METAL CLEANERS

(*From Page 44*)

in removing the soil. Nonionic surface active agents had about the same effect as plain water at the concentrations given. The only cation-active agent included in the series—lauryl pyridinium chloride—was slightly less effective than plain water. Of the anionic-active agents, sodium lauryl sulfate ranks about the same as the cation-active compound, while the alkyl aryl sulfonate was poorer in soil removal. All of the soaps proved to be extremely poor, in fact they definitely interfered with removal of the soil by water. Another way of putting it is that they caused preferential wetting of the steel by the oil. Presumably the soaps hydrolyze and furnish free fatty acid, which is the important factor in causing the soil to adhere so strongly to the steel. If hydrolysis is the cause, in a sufficiently alkaline solution this should be repressed to the point where no free oleic acid would be formed. This hypothesis was confirmed by use of two per cent sodium metasilicate solutions containing 0.02 and 0.2 per cent of sodium oleate. The ratings with these two concentrations of soap in the metasilicate solution were both A-. This shows that such a solution did not inhibit soil removal but in fact promoted it slightly. When oleic acid was added to the oil and umber used for coating the steel washers, it inhibited soil removal by water in proportion to the amount of oleic acid present.

In order to determine whether similar results would be obtained with a different form of soil, steel rings were soiled with a mixture of 60 parts of medium-viscosity mineral oil and 40 parts of powdered graphite. These were washed as before with water and with soap solution. Although the washings was slower, the results were similar to those obtained previously. For example, water alone was much more effective in removing the soil than a 0.1% solution of chip soap.

This work shows that we still have a long way to go in understanding the fundamentals of detergency. The type of surface to be cleaned is a very important factor and one which has not been stressed sufficiently. It is essential to avoid applying detergent results with one type of surface to other quite different types of surfaces. Effects due to sorption of the detergent or of its hydrolytic products, if such are formed, are probably more common than is usually recognized. It is seen that neutral water-soluble soaps instead of cleaning mineral oil from metals, can affix it more firmly. A study of wetting in terms of contact angles provides a useful experimental approach to several types of detergent problems.

SANITARY PRODUCTS
A SECTION OF SOAP

THE state legislative pot is boiling again with insecticide bills coming up in Oklahoma, South Carolina, Utah, and elsewhere, and a proposed amendment in California. That this constant increase and variation in state laws controlling the sale of insecticides and other so-called economic poisons becomes an ever sharper thorn in the side of the manufacturer is no secret. That some companies which produce a full line of sanitation specialties are either dropping out or planning to drop out their insecticides is not inspired alone by poor sales. It is becoming just too much trouble to do business in too many states,—not to mention the ever growing expense of registration fees and other requirements. Frankly, we wonder just how long remaining manufacturers will continue to take it before dropping out of states where requirements are tough beyond the point of endurance.

WORD has come that the American Hotel Association has abandoned its project for testing floor waxes and certain other chemical maintenance specialties at the suppliers' expense and setting up lists of approval of such products for its membership. The Association will undertake the project on a somewhat different basis, but at its own expense. The original proposal brought forth a storm of protests from the sanitary supply and allied industries, as might well be expected. When the facts were brought before AHA in their true light and all angles considered, there is little surprise that an industry association of this calibre decided to give up the original plan.

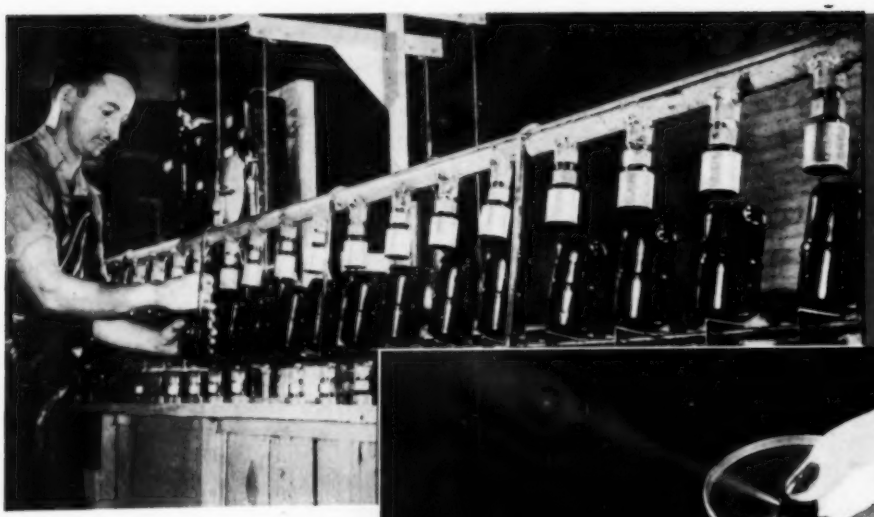
When a group like AHA can be induced even to take the first steps in one of these "product approval list" schemes, every assurance exists that there will be others of like nature to come at later dates. Some are already in existence and operating, and are subject to all the justified accusations and criticisms which are their lot. We urge industry to continue to fight against them as it did in the case of the AHA project. By and large, they not only fail to protect the consumer, but actually mislead him. No product of established good reputation needs any approval except that of its satisfied users.

INVARIABLY small manufacturers fear most the competition of larger companies. As a rule, we note that it is the larger competitors who are held responsible for the ills and woes of the smaller firms. Looking about in the sanitary products, insecticide, and allied fields, our conclusions are just about the exact opposite of this contention. Invariably, we find that the smaller the firm the quicker they are to break a market, cut quality in competition, or permit a salesman to misrepresent their goods. The larger, more strongly established organizations quite evidently cannot afford to take the risks involved in such activities. And our observations indicate that they suffer more from the sniping of small competitors than do the latter from any direct competition.

With no thought of maligning small outfits, many of which are as clean as a whistle and as sound as a rock, we nevertheless are a trifle fed up on this bugaboo of the large competitor,—the big, bad boy on which everything is blamed. And as to their main object being the demise of their smaller competitors, we feel that this is plain bunk. There will always be small firms to fill that need which the larger organizations cannot fill, to specialize, to command a certain percentage of the market. Before blaming competitive troubles willy-nilly on the big fellows, some introspection may reveal other whys and wherefores.

Liquefied

By R. A. Fulton
and S. A. Rohwer



Above: Production line scene showing the filling of the so-called "high pressure" aerosol bomb.

Right: Continental Can Company's low pressure aerosol bomb, which was introduced widely on the retail market last year.

Based on a paper presented at the annual meeting of the American Chemical Society in Washington, D. C., Aug. 30, 1947.

THE idea of dissolving insecticides in suitable solvents and liquefied gases and dispersing the solutions through small orifices resulted from investigations by Goodhue and Sullivan.[2] Insecticides dispersed in this manner have been termed liquefied gas dispersed aerosols.

An aerosol is a system of particles of ultra-microscopic size dispersed in a gas. Liquid particles make a fog whereas solid particles form a smoke. An insecticidal aerosol is one in which the particles are those of insecticides which may be liquids (nicotine, pyrethrins, tetraethyl-pyrophosphate or solids (DDT, rotenone).

There are three commonly used methods of producing insecticidal aerosols: (1) by the incomplete combustion of tobacco,[1] pyrethrum or other organic material containing insecticides, (2) by spraying a solution of insecticides (e.g. DDT in fuel oil or rotenone in safrole) on a heated surface such as an electric hot plate or in the exhaust pipe of an automobile and (3) by spraying a solution of insecticides in liquefied gases into the air. In this paper only the third method is considered.

The method was first tested in 1941 against flies and mosquitoes and in 1943[4] U. S. Patent No. 2,321,023 was issued to Goodhue and Sullivan, the inventors. The patent is assigned to the Secretary of Agriculture. Licenses are issued royalty-free for the manufacture, use, and sale of products produced under the patent.

In order to produce an insecticidal liquefied gas aerosol, the insecticide is dissolved, usually with the aid of auxiliary solvents, in a low boiling liquid such as "Freon-12" (dichlorodifluoromethane) held in a closed container. "Freon-12" boils at -29.8° C. and its vapor pressure of 67.5 pounds per square inch gage at 20°C. (68°F.) is sufficient to yield the contents of the receptacle or "bomb" through a capillary tube reaching the bottom of the bomb. The liquid is discharged through a small orifice varying in size from 0.013 to 0.024 inch diameter. As it is sprayed a fine mist forms and the liquefied gas evaporates almost instantly, leaving the insecticide particles suspended in the air.

During the recent war the invention found extensive use by the armed forces in the form of one pound aerosol bombs. The formula at first contained five percent pyrethrum extract containing 20 percent pyrethrins, two percent sesame oil, and 93 percent "Freon-12." It was later modified to contain two percent pyrethrum extract, eight percent sesame oil, and 90 percent "Freon-12". Near the end of the war formula No. G-179 was developed which contained two percent pyrethrum extract, three percent DDT, five percent cyclohexanone, five percent lubricating oil, and 85 percent "Freon-12". At the end of the war the bombs found their way into civilian use. Most of the bombs marketed during 1946 contained two percent

Gas Insecticidal Aerosols

U. S. Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

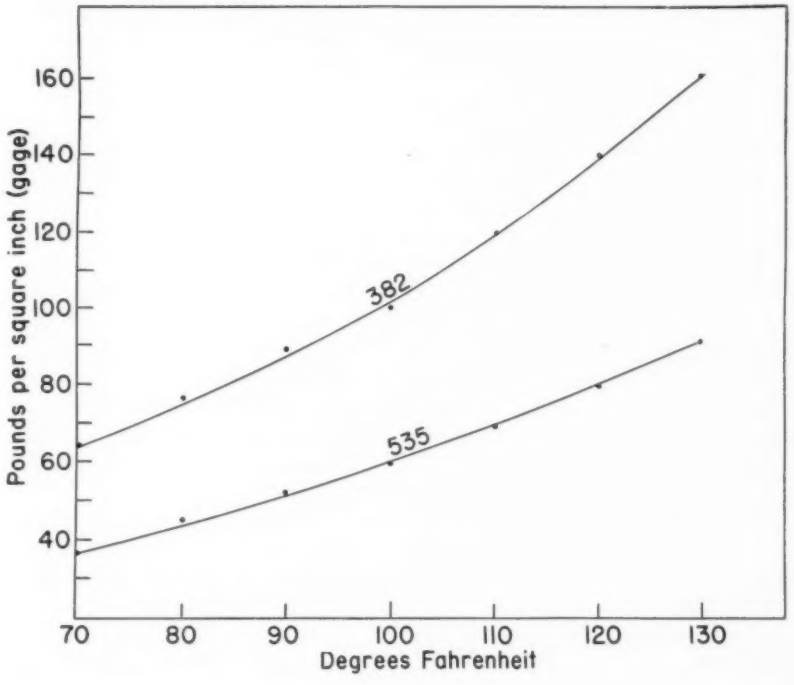
pyrethrum extract, three percent DDT, five to seven percent cyclohexanone or 10 to 12 percent methylated naphthalene, and the remainder "Freon-D12."

Developments in the formulation, method of use and packaging of gas propelled insecticidal aerosols since the war have been rapid. Much of this has been stimulated by the discovery and availability of new insecticidal chemicals. Competition to produce less expensive devices has also contributed to developments, particularly in aerosols used to combat household pests.

The earlier work and development was directed to provide more convenient and effective means of controlling insects which annoy, attack or transmit diseases to man. The aerosol was intended to be released in closed spaces and it was therefore necessary that the various ingredients be harmless to man. Prior to recommending any formulation for use in aerosol form, all the ingredients were appraised for their toxicity to man. This policy has been continued up to the present for household aerosols. This means that materials not tested and cleared as to freedom from health hazard are not acceptable for use in household aerosols under the licensing procedure. This fundamental practice imposes certain limiting factors in the formulation of these household aerosols, restricting the propellent gases, the solvents and toxicants that may be used. Such restrictions are, however, not necessary for all types of insecticidal aerosols. There are certain uses, such as in greenhouses, where appropriate safeguards can be employed to protect the operator while applying and after using the insecticide. In these cases highly toxic materials may be used with reasonable safety.

THERE are certain problems which are common to liquefied-gas aerosols for all purposes. These include the question of the particle size and distribution and their relation to performance and final use. Compressed gases can be used as propellents in various ways. They may create a coarse wet spray or produce large numbers of small particles of certain chemicals which adhere to surfaces as a result of driving power. Such use falls outside the generally accepted term aerosol even though the particles appear to form a fine mist as they leave the orifice. This brings up the question, "What is a liquefied gas insecticidal aerosol?" There is no precise and fully satisfactory answer now available. However, cooperative investigations by chemists, physicists and entomologists have contributed much information on this question. It points to the conclusion that the particles of all components must be of a size that will remain suspended for approximately one hour . The time will vary slightly depending on the specific gravity of the materials. To date the most acceptable definition of an insecticidal aerosol is a system of particles suspended in air where 80 percent of the particles are less than 30 microns in diameter, and no particles larger than 50 microns. Such a definition leaves much to be desired. It does, however, afford a basis for determining in what combinations and ratios the various ingredients may be used. Minor modifications in the pressure of the propellent and the amount and character of the insecticides and solvents may result in failure to produce particles in this approximate range. Such modifications become especially signi-

Figure 1. A comparison of the pressure relationship of the "Freon 12" aerosol and the low pressure type (382) is the standard formula used for disinfecting air craft. 535 is a representative low pressure formula.



ficant where the pressure is reduced, as in the so-called "beer can aerosols."

Formulation, however, is not the only factor to be considered. Particle size is also affected by the size and structure of the valve through which the material must pass. So important is this that it is now frequently stated that the formulation and the device must be "in balance." The insecticides, solvents, and propellents must be combined to suit the valve and container. The finished product is thus "tailor made." This is especially true in the household type aerosols.

Household aerosols. The better-known gas propelled insecticidal aerosols of the so-called high pressure type (approximately 70 p.s.i. gage) belonging to the household class use "Freon-12" (dichlorodifluoromethane) as the propellent. Propellents which are now coming into use for low pressure aerosols (35-38 p.s.i.) are mixtures of "Freon-12" and "Freon-11"* (trichlorofluoromethane), or "Freon-12" and methylenechloride mixtures of "Genetron 101" (1,1,1-chlorodifluoroethane) with "Freon-11" and"-12" have been proposed for use in low pressure aerosols, but up to the present none has actually been used. With the exception of "Freon-12," none of these propellents can be used alone.

The low pressure aerosols which are now on the market contain a mixture of "Freon-11" and "-12," 50:50 or 46:54 respectively. Either combination produces an acceptable propellent when used with the proper combination of solvents and toxicants. The pressure of a typical low pressure formula compared with a formula using "Freon-12" alone is shown in Fig. 1. The containers for formulas using "Freon-12" alone must be tested and classified to meet ICC requirements—ICC 40 for non-refillable containers and ICC 9 for refillable containers. An exemption was accepted by the Interstate Commerce Commission July 1947 permitting the shipment of non-inflammable aerosols with less than 40 pounds gage pressure at 70°F. in light containers.

A mixture of "Freon-12" and methylene chloride in a 50:50 ratio produces an acceptable combination for certain formulations. With necessary solvent and toxicants the resulting pressure is approximately 36 p.s.i. gage. Where such a mixture is marketed, the user should be cautioned to direct the mist away from the body because of the anesthetizing characteristics of methylene chloride. The toxicants usually used are DDT, pyrethrum and a synergist. The amount of the pyrethrins depends upon the kind and amount of synergist that is included. The percentage of DDT has a direct bearing on amount of the other non-volatile constituents used. To keep the DDT in solution it is necessary to use a methylated naphthalene, such as PD544C, "Velsicol AR-50" or "AR-60,"** in addition to petroleum distillates. The toxicants in the low pressure aerosols are the same as in the high pressure aerosols, but the ratio and amounts differ. Usually the percentage of DDT is reduced in the low pressure aerosols, thus permitting a corresponding reduction in the amount of methylated naphthalene. This does not reduce the kill provided a satisfactory amount of agents causing the knockdown and other killing agents are included. For certain formulations—all of which include the auxiliary insecticide piperonyl butoxide—it is acceptable to reduce the percentage of propellent so the ratio of volatile propellent to solvent and toxicants is 80:20, respectively. This ratio of volatiles to non-volatiles is being carefully investigated and later other types of formulation at or about this level may be found to be effective and acceptable. The domestic aerosol field is highly competitive and it is very important that performance not be overlooked. The aim should be better aerosols and the standard could well be raised. How this can be done is a matter continually before those directly concerned with review and acceptance of formulas produced under license.

Greenhouse aerosols. Experimentation with gas-propelled aerosols to determine their possible usefulness in controlling various insects injuring plants grown in greenhouses began in 1941. It was quickly learned that a type of aerosol different from that for household use would be required. The ease with which practical procedures of use and application could be followed to safeguard the operator removed many of the restrictions on the type of formulations that could be safely used. One of the principal problems was the determination of the tolerance of the plants to the various ingredients. It was known that many of the important greenhouse pests such as thrips, the greenhouse-leaf-tier, azalea leaf-miner, rose midge, fungus gnats and the broad mite could be effectively controlled with DDT and that the persistency of the residues was beneficial. The amount of DDT required and its persistency on the plant when applied in aerosol form were easily appraised.

The problems of getting the desired amount of DDT in solution, holding it there under the various ranges of temperatures, and assuring effective release and dispersal were the principal ones in preparing formulations. Several solvents and several percentages of propellents thought suitable on the basis of their chemical and physical properties were subjected to tests and the presently used DDT greenhouse aerosol was developed which contains five percent DDT, approximately 10 percent methyl-naphthalene, three percent acetone, and 82 percent "Freon-12."

The usefulness of this type of aerosol for control of greenhouse pests had hardly been accepted when so-called hexaethyl tetraphosphate, now known to have as its principal active component tetraethyl pyrophosphate, became available. Its effectiveness in controlling various plant pests was developed rapidly. It proved to be especially useful for the control of several aphids, spider mites common to greenhouses, the greenhouse whitefly, and certain mealybugs.

Tetraethyl pyrophosphate and associated ethyl phosphates are highly toxic to warm-blooded animals and are readily absorbed through the skin. In using these materials special precautions are required, including the

(*Turn to Page* 148C)

TOXICITY OF QUATERNARIES

Dr. Herman A. Shelanski†
Industrial Toxicology Laboratories
Philadelphia, Pa.

THE use of quaternary ammonium compounds during the past 10 years has increased rapidly in many divergent fields. Thus we find that these compounds may range in use from industrial detergents and disinfectants to products designed for human and animal consumption. The oral uses for which these compounds are designed are limited to therapeutic and intermittent application. It is for the purpose of determining the physiological action of some of these compounds that this study was undertaken. The information reported in this article was obtained over a period of three and one-half years, under a grant from Onyx Oil and Chemical Co., Jersey City, N. J.

The following quaternary ammonium compounds were used in this study:

1. Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl benzyl ammonium chlorides ("Onyx BTC*")
2. Alkenyl dimethyl ethyl ammonium bromide[1] ("Onyxide")
3. Lauryl isoquinolinium bromide ("Isothan Q-15*")
4. Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl 3,4-dichlorobenzyl ammonium chlorides[2] ("Tetrosan")

I. Toxicity Studies on Animals

A. *Acute and sub-acute oral toxicity studies*: Acute oral toxicity studies were performed on white rats and guinea pigs which were fed varying doses of the above quaternary ammonium compounds. The materials were prepared and administered in a 10 percent aqueous solution, with the exception of "Isothan Q-15," which was used in 20 percent solution. These solutions were introduced directly into the stomach of the test animals by means of a stomach tube. Those animals receiving higher dosages died within 24 to 72 hours, In most cases, the animals which survived the three to four day period survived the course of the experiment. Animals which died were autopsied and showed irritation of the gastro-intestinal mucosa. Animals were kept for a two week observation period following the administration of the test material. Experimental toxictiy values are listed in Table I.

A further study was made to determine acute toxicity values of dilute solutions of the above four quaternary ammonium compounds with the following results:

White rats were able to survive 100 cc/kg. of a 0.1 percent solution by weight of the above four compounds. Guinea pigs were able to survive 75 cc/kg. of a 0.1 percent solution by weight of the above four substances.

Five groups of ten dogs each were used in the sub-acute oral toxicity study. Each of four of these groups was fed a 1:5000 dilution of each of the compounds as their drinking water

* Registered trade marks of the Onyx Oil and Chemical Co.

1 The term "alkenyl" is used to indicate a mixture of aliphatic hydrocarbon radicals, principally unsaturated, containing approximately 18 carbon atoms.

2 Onyx "Tetrosan" grade of alkyl dimethyl 3,4-dichlorobenzyl ammonium chloride also contains alkenyl dimethyl ethyl ammonium bromide, these two products being present in the ratio of 5:1.

† Before 35th annual meeting NAIDM, New York, Dec. 6, 1948.

TABLE I

Acute Oral Toxicity Studies on White Rats and Guinea Pigs

SUBSTANCES	White Rats L. D. 0	White Rats L. D. 50	White Rats L. D. 100	Guinea Pigs L. D. 0	Guinea Pigs L. D. 50	Guinea Pigs L. D. 100
1. Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl benzyl ammonium chlorides ("Onyx BTC")	316 mg/kg	445 mg/kg	630 mg/kg	158 mg/kg	200 mg/kg	316 mg/kg
2. Alkenyl ammonium bromide dimethyl ethyl ("Onyxide")	316 mg/kg	500 mg/kg	795 mg/kg	126 mg/kg	158 mg/kg	316 mg/kg
3. Lauryl isoquinolinium bromide ("Isothan Q-15")	126 mg/kg	230 mg/kg	504 mg/kg	80 mg/kg	200 mg/kg	400 mg/kg
4. Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl 3,4-dichlorobenzyl ammonium chlorides ("Tetrosan")	460 mg/kg	730 mg/kg	1000 mg/kg	252 mg/kg	316 mg/kg	500 mg/kg

3 HOUSEHOLD NECESSITIES

1.. INSECT-O-BLITZ 16 oz.

The Quality Leader because: FORMULA—The Insect-O-Blitz formulation is Government approved. No sacrifice of quality here—full 3% DDT and 2% Pyrethrum (0.4% Pyrethrins), VOLUME—Contains full 16 oz. in a rugged steel container. Dispensed with a sturdy, non-leaking screw-type valve. PRESSURE—High pressure assures a finer, completely atomized spray. Non-Inflammable.

Fair traded at $1.98 **Retail $2.00**

2.. 12 oz. Junior INSECT-O-BLITZ

A quality 12 oz. Aerosol at a competitive price. Offered only after months of testing. FORMULA—3% DDT, 0.2% Pyrethrins and 1.5% Piperonyl Butoxide, one of the newest chemicals developed for insecticides. Formula insures a high degree of kill. CONTAINER—A sturdy steel container with an eye-catching design. Built to hold many times pressure actually used—safe! VALVE—No "trick" valve to leak. Insect-O-Blitz uses the dependable leak-proof Non-Corrosive aluminum screw-type valve. Non-Inflammable.

Fair traded at $1.49 **Retail $1.50**

3.. TETCO FIRE EXTINGUISHER

Every home needs the protection of a Tetco Fire Extinguisher. Sell for protection of home, garage, and car—triple sales! Tetco contains 16 ounces of fluid—90% carbon tetrachloride combined with other chemicals and charged with CO_2 gas. Sold complete with bracket for wall hanging. Easy to use—just pull ring. Sprays 17 feet. Hermetically sealed—always full, always ready.

Fair traded at $2.48 **Retail $2.50**

Industrial Management Corporation offers you FULL TRADE DISCOUNTS. Write TODAY for full information and prices. We will refer your inquiry to our nearest representative. All shipments F.O.B. Valparaiso, Ind. or Los Angeles, California.

TETCO CO.
Division of Industrial Management Corporation
458 S. Spring St., LOS ANGELES 13, CALIF.

TABLE II

Chronic Toxicity Studies of Four Quaternaries on Guinea Pigs and White Rats

Study	Technique of Study	Guinea Pigs	White Rats
Weight curves		Experimental groups: weight gains comparable with those of Control Group A. Control Group B: slight increase in weight over that of other groups.	Experimental groups: weight gains comparable with those of Control Group A. Control Group B: slight increase in weight over that of other groups.[1]
Urine Studies	Samples obtained from 5 animals of each group were pooled. Chemical and microscopic determinations were made monthly for a period of 6 months and at the end of each 6 month interval thereafter.	Sugar:* Albumin:* Phosphates:* Casts:* Blood Cells:*	Sugar:* Albumin:* Phosphates:* Casts:* Blood Cells:*
Blood Studies	Blood studies were made on 5 animals from each group monthly for a period of 6 months and at the end of each additional 6 month interval.	Red cell count:* White cell count:* Differential count:* Hemoglobin determination:*	Red cell count:* White cell count:* Differential count:* Hemoglobin determination:*
Fertility		Normal with respect to both control groups.	Normal with respect to both control groups.
Gross Pathology	Animals which died during the course of the investigation were autopsied.	No gross pathology was observed in any of the experimental animals which could be attributed to the substances tested. Occasional hydatid cysts were found in some livers.	No gross pathology was observed in any of the experimental animals which could ge attributed to the substances tested. Occasional hydatid cysts were found in some livers. There was present in several of the animals which died in the group fed BTC, a large amount of fluid in the cecal region of the intestine.
Histopathology	All of the animals which survived were autopsied and the sections cited were removed. The tissues were fixed in formalin, sectioned by frozen section technique, and stained with Delafield's hematoxylin and eosin.	Lung:* Heart:*	Lung:* Heart: mild toxic changes were noted and were about equal to those found in the normal controls.[2]
		Liver: small granulomas in the livers of one experimental animal and in 3 control animals. Spleen:* Pancreas:* Stomach:*	Liver: toxic changes milder than those found in the heart tissue were noted.[2] Spleen:* Pancreas:* Stomach: metaplasia of the gastric mucosa with hypertrophy of intestinal epithelial cells of the mucosa. This is the most marked change found in the experiment.
		Small intestine:* Kidney:*	Small intestine:* Kidney: toxic changes similar to those found in the liver were noted.[2]
		Adrenal:* Testes:* Muscle:* Spinal cord:*	Adrenal:* Testes:* Muscle:* Spinal cord:*
Mortality		*	*

*No significant difference was obtained in the experimental animals as compared to both control groups.

Note 1. During the course of the investigation it became quite apparent that the animals in the groups fed 25 mg/kg "BTC" and 25 mg/kg "Onyxide" began to decline at an earlier age than those in the other experimental and control groups. This change was a more rapid decrease in weight beginning at 15 months and continuing for the rest of the animal's life. These animals did not appear to be in too good health. Although such gross observations were not noted during the course of the study on guinea pigs, it should be noted that studies on guinea pigs were only carried on for a period of one year.

Note 2: The toxic changes described under heart, liver and kidney histopathological studies were found in the control group as well as in experimental groups, and are probably those occurring with age rather than those which might be attributed to the feeding of the test materials. If howver, the latter should be the cause of these changes, then "BTC" and "Isothan Q-15" seem about equally able to produce them, with "Onyxide" and "Tetrosan" negative. In general more effects were produced by the 25 mg/kg than by the 12.5 mg/kg doses, although the changes were not proportionate to the increased dose.

No neoplasms were found which could be attributed to the material tested. Both F1 and F2 generations were kept under the same conditions as the parent groups and showed no deviation from the controls.

daily for six months. The fifth group of dogs was used as a control. This group received the same diet as the other four groups, except that no quaternary was added to their drinking water. They were kept under the same conditions as the experimental animals.

Dogs used in this study were obtained when they were twelve weeks old and were kept for an observation period of one month before starting the experiment. None of the animals of either the experimental or control groups died during the course of this investigation. Weight curves for experimental and control animals were normal. None of the animals exhibited any untoward reactions during the course of the experiment. As a precautionary measure, however, each dog received two distemper injections. At the end of six months, six animals from all five groups were autopsied and the following tissues removed for histopathological study: stomach, intestine, spleen, liver, kidney, heart, lung, pancreas, and adrenal. There were no deviations from the normal controls observed in any of these tissues. From the above information, it is apparent that in the amounts given, no evidence of permanent or chronic injury in dogs was produced by the following compounds: Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl benzyl ammonium chlorides ("Onyx BTC"), Alkenyl dimethyl ethyl ammonium bromide ("Onyxide"), Lauryl isquinolinium bromide ("Isothan Q-15"), and Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl 3,4-dichlorobenzyl ammonium chlorides ("Tetrosan").

Conclusions:

It might be added in passing, that if one may be permitted to translate the dosages based on the body weight of warm-blooded animals, then it would appear that for an average man weighing 70 kilos the following amounts in dilute solution might be ingested without untoward reaction: "Onyx BTC"—22.120 gm; "Onyxide"—22.120 gm; "Isothan Q-15"—8.820; "Tetrosan"—25.200 gm.

B. Chonic oral toxicity studies: Because of the fact that acute and subacute toxicity studies indicated that the four quaternary ammonium compounds under investigation exhibited a low order of toxicity, the study was extended to include chronic oral toxicity tests on guinea pigs and white rats.

Both types of animals were divided into six groups, two of which were reserved as controls. One group was consistently fed only "BTC," another "Tetrosan," the third "Onyxide," and the fourth "Isothan Q-15," by introducing a tube directly into the stomach of the animal. Each group was further subdivided in accordance with the folowing dosage levels: 25 mg/kg; 12.5 mg/kg; 5 mg/kg.

The substances were dissolved in distilled water. Control Group A received 5 ml of water per animal, and Control Group B. was fed a normal diet.

Twenty guinea pigs, ten males and 10 females, were allocated to each of the control and subgroups. The experiment was started when each animal weighed from 275-350 grams. Guinea pigs were kept on a diet of rabbit pellets, fortified with vegetable greens.

In the case of white rats, 12

TABLE III

Dermatitic Activity of Four Quaternaries on Fifty Human Subjects (Twenty-five Males and Twenty-five Females)

Product	Concentration	Results
Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl benzyl ammonium chlorides ("Onyx BTC")	10%	3+ to 4+ primary irritant reaction within 24 hours.
	1%	0 to 2+ primary irritant reaction. 30% of the subjects did not react within 24 hours. All subjects reacted within 4 days.
	0.1%	None of the subjects reacted within 5 days.
	Second application 0.1%	No reaction in 48 hours.
Alkenyl dimethyl ethyl ammonium bromide ("Onyxide")	10%	1+ to 4+ primary irritant reaction within 24 hours.
	1%	0 to 2+ primary irritant reaction within 24 hours. 30% of the subjects did not react within 24 hours. 10% of the subjects reacted within 48 hours. All of the subjects reacted within 4 days.
	0.1%	None of the subjects showed any reaction within 5 days.
	Second application 0.1%	No reaction within 48 hours.
Lauryl isoquinolin bromide ("Isothan Q-15")	10%	± to 2+ primary irritant reaction within 24 hours.
	1%	No reaction within 72 hours. 40% of the subjects showed from ± to 1+ primary irritant reaction in 4 days.
	0.1%	No reaction within 5 days.
	Second application 0.1%	No reaction within 48 hours.
Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl 3,4-dichlorobenzyl ammonium chlorides ("Tetrosan")	10%	4+ primary irritant reaction wthin 24 hours.
	1%	0 to 2+ reaction within 24 hours. 12% of the subjects did not react within 24 hours. All of the subjects showed reactions within 4 days.
	0.1%	No reaction within 5 days.
	Second application 0.1%	None of the subjects reacted within 48 hours.

males and 13 females constituted each control group and each subgroup. When the animal weighed at least 50 grams the experiment was started. The weight range of the rats was from 50 to 75 grams. The strain of white rat used was a mixture of the Yale, Sherman and Wistar strains. They were kept on a diet of "Purina Dog Chow Checkers" supplemented by ground meat, oranges and vegetable greens.

Results of this study are given in Table II. These findings were obtained over a period of one year on guinea pigs and for a two year period on white rats.

Conclusions:

THE four quaternary ammonium compounds studied in this investigation may be considered as irritants in higher concentrations. In the concentrations tested, these substances are apparently non-toxic to warm-blooded animals.

Listed in accordance with a decreasing order of toxicity, as determined by the chronic oral toxicity tests described are: "Onyx BTC," "Isothan Q-15," "Onyxide," "Tetrosan."

II. Skin Irritation and Sensitization Study

THE quaternary ammonium compounds used in the study of skin irritation and sensitization were the same as those investigated with respect to toxicity in the first portion of this paper, namely:

1. Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl benzyl ammonium chlorides ("Onyx BTC")
2. Alkenyl dimethyl ethyl ammonium bromide ("Onyxide")
3. Lauryl isoquinolinium bromide ("Isothan Q-15")
4. Alkyl (C_8H_{17} to $C_{18}H_{37}$) dimethyl 3,4-dichlorobenzyl ammonium chlorides ("Tetrosan")

The patch-test method employed is a modification of that suggested by Dr. Louis Schwartz (1) of the United States Public Health Service. The test material was placed upon lintine discs covering an area of approximately one and one-half square inches. These patches were placed in contact with the skin of the back, covered with waxed paper extending beyond the area of the patch, and held in place by means of adhesive tape. Patches were allowed to remain on the backs of these subjects for a period of five days, at the end of which time the patches were removed and the reactions noted.

Three weeks after the removal of the first patch application, material was again applied to the backs of the same subjects and allowed to remain in contact with the skin for 48 hours. At the end of this time, the patches were removed and the reactions noted.

Preliminary studies were first made on fifty subjects, twenty-five males and twenty-five females, with the results indicated in Table III. Final studies were made on two hundred unselected human subjects, one hundred males and one hundred females, with the results tabulated in Table IV.

General Summary

THE four quaternary ammonium compounds studied show evidence of being toxic in high concentrations. There was no neurotoxic or hemotoxic effect observed, although the materials may be considered as strong irritants which are capable of producing a hemmorrhagic intestinal mucosa, when administered orally in concentrated form. In dilute solutions they may be considered relatively non-toxic from the acute oral toxicity standpoint. In very low dosage forms these substances may be considered safe for intermittent use.

These four compounds are not to be considered for use in foods where the chronic consumption may surpass the doses reported in this paper, in which case they may prove toxic (3). The intermittent use of these materials appears to be permissible for therepeutic uses designed for human or animal consumption.

These four compounds may be considered strong primary skin irritants in concentrated solutions. However, in dilutions of 0.1 percent or less none of these substances may be considered primary irritants. The above study also indicated that they do not appear to be sensitizers.

The use of these materials appears to be permissible for therapeutics designed for topical application to human beings or animals.

Acknowledgments

Dr. Jefferson H. Clark is the pathologist reporting on the histopathological studies in these experiments.

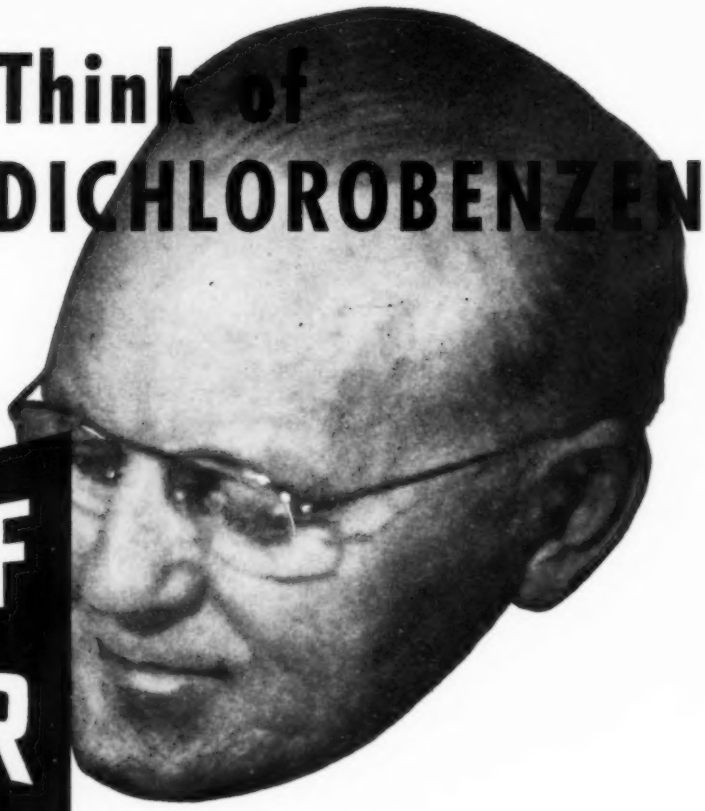
(*Turn to Page* 153)

TABLE IV

Final Study on Dermatitic Activity of Four Quaternaries on Two Hundred Human Subjetcs (One Hundred Males and One Hundred Females)

Product	Concentration	
"Onyx BTC"	0.1%	None of the subjects reacted within 5 days.
	Second application 0.1%	No reaction within 48 hours.
"Onyxide"	0.1%	None of the subjects showed any reaction with 5 days.
	Second application 0.1%	No reaction within 48 hours.
"Isothan Q-15"	0.1%	None of the subjects reacted within 5 days.
	Second application 0.1%	No reaction within 48 hours.
"Tetrosan"	0.1%	None of the subjects reacted within 5 days.
	Second application 0.1%	No reaction within 48 hours.

When You Think of —PARADICHLOROBENZENE



THINK OF HOOKER

Sparkling clear crystals of pure paradichlorobenzene have been produced at Hooker for over twenty years. Sold under the registered trade names, PARADI and PARACIDE, the Hooker product has established a record of unsurpassed high quality.

Whether you handle Paradi as a fumigant or as a deodorant, you can get it in the size best suited for your particular use. Seven sizes, from "Powdered" which passes through No. 32 mesh, to "Pea No. 1" which passes through 5/8 in. mesh, on No. 2½, give you a wide choice of sizes with but one quality . . . the highest.

The following Hooker Bulletins may be helpful to you. They are available free of charge when requested on your business letterhead.

Bulletin No. 450 Paracide for Peach Tree Borer
Bulletin No. 451 Paracide for Tobacco Blue Mold
Bulletin No. 452 Paradi for Clothes Moths
Bulletin No. 453 Paradi for Clothes Moths, Carpet Beetles and Fish Moths
Bulletin No. 454 Paradi—Moth killing—Blocks and Crystals
Bulletin No. 504 Use of Paradi in Tanneries

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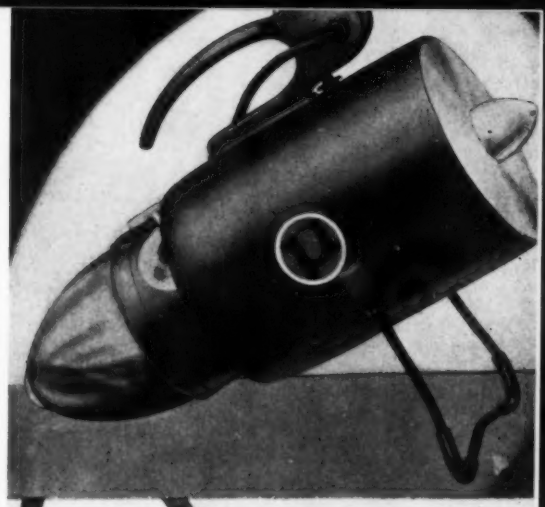
Sprayers Again

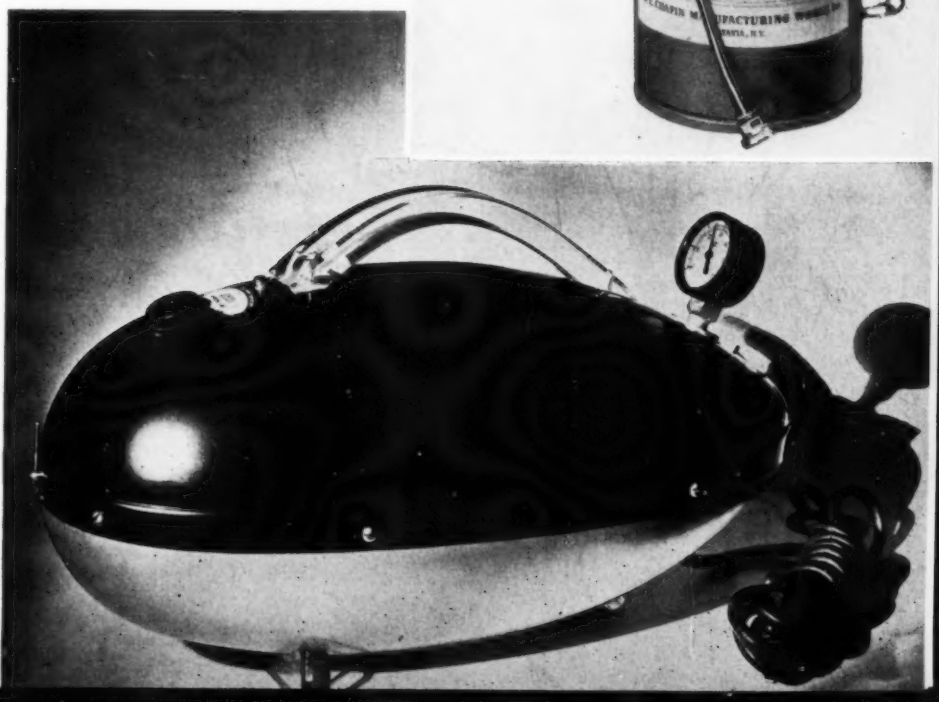
By Dr. E. G. Thomssen

IN publishing two recent articles on the subject of sprayers we anticipated that there might be some criticism of statements or omissions made. Because of the possibility of errors we asked for and received comments or corrections that would be contained in a third discussion of the subject if there was sufficient interest in the articles. This interest has been manifested, thereby justifying a further installment in the series. The response of our readers also indicates an active and continuing interest in sprayers, a condition that should result in still further improvements in sprayer design.

WE have been criticized because of statements made in our previous articles ("Sprayers Up to Date," *Soap & Sanitary Chemicals*, Sept. and Oct., 1948) regarding the operational difficulties encountered in using electric steam sprayers. Our investigations indicated that users raised objections because thermal generators frequently failed to operate, were quite bulky, required safety precautions and were limited as to the type of insecticide that might be employed. One electric steam sprayer manufacturer has called our attention to the fact that his firm has made such sprayers for over 12 years. It is true, he states, that during this period such complaints have been received, but not too frequently. As a result, constant improvements were undertaken and the unit is now completely revamped to eliminate shortcomings. Refinements made in recent months have resulted in a resurgence of interest on the part of users of thermal type sprayers in retsaurants, food stores, hospitals and military and naval buildings. Such assurance from a prominent manufacturer indicates that steam sprayers can regain some of their early popularity after the "bugs" have been eliminated.

Since publication of our earlier articles, two sprayers that we failed to mention and which have application in the industrial liquid insecticide field have come to our attention.





Right, top to bottom: The Hession "Microsol No. 202"; center, the Chapin carbon dioxide powered compression sprayer, and, bottom, an electric-steam type sprayer.

Methocel:

the Excellent Emulsion Stabilizer

Do you have a product that needs stabilization—thickening? METHOCEL, now in *powdered* form, is an outstanding emulsion stabilizer and thickener.

This versatile ingredient is bland, physiologically inert, odorless, colorless, stable in viscosity and uniform in its thickening properties. When used as an additive to shampoo, METHOCEL gives a stiffer suds, improved texture and lathering properties, and an added smoothness to the lather.

METHOCEL can also be used to extend soap by reducing fat consumption, to harden bar soap, extend liquid soap and thicken disinfectants.

Get acquainted with the *new* METHOCEL, *powdered*. Write or phone us for additional uses of METHOCEL in the soap and sanitary industry. Send for free, experimental sample of the *new* METHOCEL, *powdered*.

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Please send me free sample of the new METHOCEL, *powdered*.

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DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND AGRICULTURE

These are a sprayer offered by R. E. Chapin Manufacturing Co., Batavia, N. Y., and another offered by Mitchell-White Corp., New York.

The Chapin sprayer, which is of compression type, eliminates hand pumping to actuate it by the use of carbon dioxide under pressure. The sprayer is of a three-gallon capacity. A tube, containing 10 ounces of CO_2, is mounted on the outside. The propellant is sufficient to atomize five tankfuls of liquid or 15 gallons. The tube is readily detachable and may be refilled quickly by dealers. If desired the srayer may be operated by hand air compression.

The "Microsol #202" unit is a development of John W. Hession, Jr. It has resulted from the development of fog-screen devices used in World War II by the U. S. Navy for combat and landing operations. The Hession sprayer is an electrically powered centrifuge that breaks down the insecticide into micron size particles. When the particles are air-borne, the aerosol fog reaches into minute cracks, crevices and other inaccessible places to destroy various insects. It may also be used for germicides, sterilizing agents and liquid deodorizing agents.

The "Microsol #202" sprayer is compact, weighs but 11½ lbs. and has a capacity of one quart of liquid which is stored in a translucent "Nylon" reservoir. It is powered by a one-third HP universal motor and is designed especially for use in small closets. The Hession machine can also operate in areas of 50,000 cubic feet. The sprayer operates by drawing the insecticide from the reservoir by means of two rapidly revolving discs. Both centrifugal force and pressure are used. The liquid on the discs is reduced to a microscopically fine film and forced across the path of a fan which diffuses and directs the aerosols into space. This fan also cools the motor. The bulk of these aerosols is concentrated within a narrow range of sizes which are said to be best adapted for insecticide purposes. "Microsol #202" is stoutly built and may be easily operated by an inexperienced person. The insecticide best adapted to and sold with this applicator is a concentrated pyrethrum solution in a mineral oil base.

Mitchell-White Corp., which handles the "Microsol #202" generator, sent us a brochure on their sprayer which contains information concerning all aerosol type generators. It is pointed out in the folder that while we included aerosol generators under the term "sprayers" in our previous articles, they are really not such. This latter term, however, is quite generally used in referring to liquid insecticide spray applicators of all kinds, a custom which we followed. Mitchell-White Corp. prefer to use the term "cold shearing generator" to describe the "Microsol #202."

A few further references to material in brochure mentioned above are pertinent. In referring to the rate of fall of aerosols it is pointed out that this rate, all other factors being equal, varies according to the square of their diameters. Thus, a particle five microns in size will fall one hundred times more slowly than a fifty micron droplet. Another observation concerns the distance mechanically generated aerosols will travel six feet above ground at various wind velocities. A five micron droplet carried by a one mile per hour wind travels 4400 ft.; by a two m.p.h. wind, 13,200 ft.; by a three m.p.h. wind, 2200 ft. A 50 micron droplet under the same wind velocities travels respectively 44, 132 and 220 ft. It should be noted that these distances are covered under ideal conditions, eliminating such factors as evaporation, cross air currents and vertical air currents. Another property of aerosols, as contrasted with gases is that the former remain at desired concentrations much longer and may be more easily controlled. Certain advantages of aerosols generated by the "Microsol #202" are cited. These include economy in refill, more concentrated spray, greater capacity and elimination of the need for propellant gases. A new "Microsol #403" is in partial production as a field unit, according to the folder. The larger unit has capacities of 40 to 240 gallons and the aerosol ranges from 25 to 75 microns in size.

We are indebted to S. H. Potts of the Bureau of Entomology and Plant Quarantine, U. S. Dept. of Agriculture, at New Haven, Conn., for a large batch of U.S.D.A. bulletins and reprints of technical articles on sprayers. Mr. Potts points out that when more efficient hand and power equipment is developed for applying more concentrated sprays and (wet) spray dust, pest control methods may be completely revolutionized. He has pioneered much research in sprayers and helped to develop a small portable mist blower that has had a ready reception in the horticultural field. In mist blowers the insecticide is propelled by air. The insecticide is not diluted with a solvent such as water. While Mr. Pott's work was largely carried out for the spraying of trees, the principles involved are applicable to the sanitary chemical field for, as we have pointed out previously, concentrated sprays are more economical to apply and give more efficient kill than the diluted sprays.

The mist blower has already given excellent results in keeping away mosquitoes during evening concerts in the Yale Bowl and surrounding territory of about 25 acres. One pound of DDT in one gallon of solution per acre kept the area free from mosquitoes for ten days. There were no complaints regarding residues on automobiles, buildings or other objects. In another test, a 12-acre suburban block with the same treatment was free from these pests for 10 days. This is a field that sanitary suppliers might develop to their advantage.

The small portable mist blower for applying concentrated spray is described by Potts and Spencer in a mimeographed release by U.S.D.A. (E.T.-234). This blower or sprayer features application of insecticides of high concentrations, fine atomization, and economy in consumption of spraying material by the use of air instead of water or other solvent. The sprayer can be adapted for use with any insecticide, fungicide or similar product as a solution, an emulsion or a suspension. It produces a fog-like mist that carries long distances. In spraying trees, tops 30 to 40 feet high can be reached, and the spray drifts 200 feet or more.

(*Turn to Page* 143)

1 Bulletin 501 (August 1946) Conn. Agr. Exp. Station P. 59.

Antara Products
a division of
General Aniline &
Film Corp.

Antara Extra

An Antara Products Publication

Detergents
Emulsifiers
Wetting Agents
Dispersants
Carbonyl Iron Powder

444 MADISON AVENUE NEW YORK 22, N. Y. FEBRUARY, 1949

ANTAROX A-200 PROVED ECONOMICAL, EFFECTIVE INSECTICIDE EMULSIFIER

The Story of ANTARA PRODUCTS

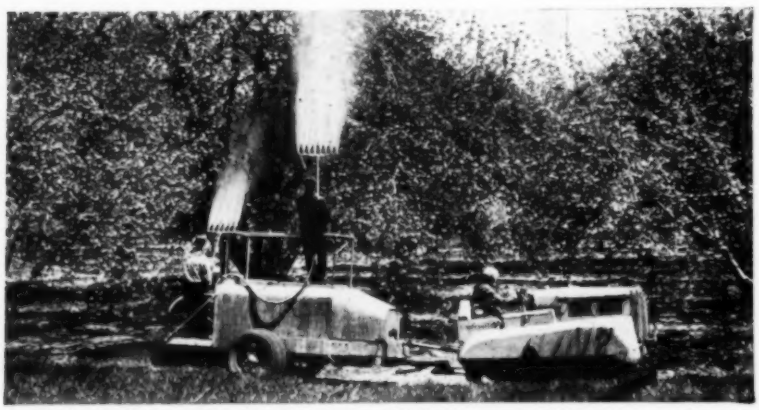
Antara Products, a division of General Aniline & Film Corp., has an interesting history. You asked for the details. Here they are:

In '41, a Special Products Sales Department was set up by General Aniline & Film Corporation to handle sales of Carbonyl Iron Powder, an electro-magnetic powder used mainly in cores in high frequency magnetic fields. This product, made only by General Aniline & Film Corporation in the U.S., is used, for instance, in most of the television and radio receiving sets manufactured here.

In 1946, the new Special Products Sales Department was given a product, with great possibilities, to promote in the consumer field. The product, sold under the trademark GLIM, a liquid-dishwashing detergent, was sold recently to B. T. Babbitt, Inc. after its market potential had been demonstrated. Other products were developed with the idea of promoting them consumer-wise—the automatic dishwasher detergent sold under the trade mark CHAT—as well as other yet unnamed clothes wash, car wash and similar detergents.

The phenomenal growth of the GLIM product, and other Antara detergents and emulsifiers made it necessary to change the structure of the Special Products Department to a name division. The result was Antara Products.

With the sale of the GLIM product, the new division changed its selling policy and is now concentrating on the sale of Carbonyl Iron Powder, surface active agents and chemicals for the industrial field. Its knowledge in the field of surface active agents dates back many years. Antara Products markets many types of detergents, and through the know-how and patent folio of the General Aniline & Film Corporation is able to manufacture many other different types of detergents.



Insecticide emulsions prepared with Antarox A-200 are more stable and more economical than those made with most other emulsifiers. Hardness of water is no drawback with Antarox A-200, a non-ionic emulsifier.

Marked economy with increased efficiency in emulsifying insecticide and herbicide concentrates is now available to packagers of insecticides and weed killers. Name of the new emulsifier which offers reduction in costs is Antarox A-200.

A result of incisive research by Antara Products, a division of General Aniline & Film Corporation, Antarox A-200 is a liquid, nonionic emulsifier of the aromatic polyglygol ether family. Versatile Antarox A-200 makes stable, easily-compounded emulsions with Chlordane, Toxaphene, DDT and 2,4-D.

Antarox A-200, the company says, will emulsify more Chlordane than other leading emulsifiers and is therefore cheaper to use.

Experts report that Antarox A-200 offers many other advantages to the compounder of herbicides and insecticides, such as stability and wettability.

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CHIGGER CONTROL

Washing and Aging Tests of a Selected Group of Compounds Effective as Clothing Treatments Against Chiggers [1]

By H. F. Cross and F. M. Snyder, [2]
U. S. D.A., Agr. Res. Adm., Bureau of Entomology and Plant Quarantine

FROM April 1942 to March 1947, a total of 5963 chemicals were tested at the Orlando, Fla., laboratory of the Bureau of Entomology and Plant Quarantine to select materials effective as clothing treatments against chigger mites. The principal species of chigger identified in the test area was *Acariscus masoni* Ewing. A small proportion of *Eutrombicula alfreddugesi* (Oud.) were also present. In 1945 a search was begun for compounds more resistant to washing than benzyl benzoate. A summary of the results with the best 150 materials is presented in this report. Data on special aging tests are included for the 34 materials that showed the greatest resistance to laundering. At least some of these may be unsatisfactory for use as clothing treatments because of objectionable qualities, such as odor, staining, or toxicity to humans. Others will probably be eliminated because of the high cost of production.

Methods

ALL materials were routinely applied to four-inch squares of 8.2 ounce bleached cotton twill at the rate of two grams per square foot of cloth. The cloth samples were saturated with 2.5 ml. of acetone or other volatile solvent in which 0.222 gram of the test compound had been dissolved. After the solvent had evaporated, the samples were cemented at each corner to four by four-inch glass slides and then carried into the field for testing. Chiggers were collected from black plastic plates placed on the ground. Five chiggers were transferred to the cloth sample with a camel's-hair brush and retained in a cell formed by placing a mason jar rubber on the cloth and covering it with another glass slide. The criterion of effectiveness was the mean stopping time (time necessary to paralyze chiggers so that they are unable to move a distance greater than their own length, or to cross a thread of cotton twill) of the five chiggers.

The 150 materials were subjected to repeated washings in an electric washing machine, in 20 gallons of water containing 0.7 per cent of soap at 118° to 120° F., and then rinsed twice in an equal volume of cool tap water. With the exception of the four esters of nitrobenzoic acid, each of the more effective materials was tested at least five times at two grams per square foot, twice at 0.5 gram, and once at 0.25 gram.

Four additional samples each of most of the more effective materials impregnated at two grams per square foot were subjected to various aging tests. The samples aged outdoors were attached to a clothes line and exposed to sunlight and rain; other samples were placed approximately four inches from an ultraviolet light; and a third group was stored approximately a quarter-inch apart in specially made wooden boxes in a darkened closet. Two samples impregnated with 0.5 gram of active ingredient and one with 0.25 gram were aged under the same conditions as the two-gram samples. The samples aged outdoors at 0.5 and 0.25 gram per square foot were placed in a shelter protected from rain by a plastic-screen roof.

All the samples were tested at seven-day intervals and were considered ineffective when they failed to inactivate the chiggers within 15 minutes.

To determine if exposure to the more effective materials killed the chiggers, 10 specimens were placed for 20 minutes on cloth samples impregnated at two grams per square foot. The chiggers were then removed to an untreated cloth and were observed at frequent intervals for recovery. All chiggers inactive at the end of four hours were considered dead. Under the same conditions control chiggers on untreated cloths remained active for at least this length of time.

The 116 compounds that withstood two to four washings when applied at a dosage of two grams per square foot are listed on the following page.

The results of tests with the 34 compounds that withstood an average of more than four launderings at the two-gram dosage are given in table 1.

The materials most resistant to washing at a dosage of two grams per square foot were gamma benzene hexachloride; diphenyl carbonate; diphenyl nitrosoamine; 2-thenyl salicylate; hexachloro-2, 5-cyclohexadien-1-one; *p*-dimethylamino phenyl thiocyanate; *p*-cresyl benzoate; and phenyl benzoate. Gamma benzene hexachloride showed the greatest resistance to water, remaining effective after an average of 19.3 launderings. Isopropyl nitrobenzoate and N-vinylcarbazole

1 This work was conducted under a transfer of funds, recommended by the Committee on Medical Research, from the Office of Scientific Research and Development, and from the Office of the Surgeon General, Department of the Army, to the Bureau of Entomology and Plant Quarantine.

2 Now with Medical Division, Army Chemical Corps.

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LIST OF 116 COMPOUNDS THAT WITHSTOOD TWO TO FOUR WASHINGS WHEN APPLIED AT DOSAGE OF 2 GRAMS per sq. ft.

Acenaphthene (S) [3]
Acetic acid, 3-chloro-2-xenyl ester
Acetic acid, 5-chloro-2-xenyl ester
Acetic acid, 4,6-dinitro-*o*-cresyl ester (S)
Acetic acid, trichloromethyl phenyl carbinyl ester (Roseacetol) (S)
Adipic acid, di-*n*-butyl ester
1-(*o*-Amylphenoxy)-2,3-epoxypropane
Anthranilic acid, cyclohexyl ester
Anthranilic acid, *n*-hexeyl ester
Aroclor 1232 (chlorinated biphenyl)
Benzenesulfonic acid, phenyl ester
Benzenesulfonic acid, *o*-tolyl ester (S)
Benzenesulfonic acid, *m*-tolyl ester (S)
Benzenesulfonic acid, *p*-tolyl ester (S)
Benzhydryl ethyl ethylene glycol diether
Benzoic acid, 2-chlorophenyl ester
Benzoic acid, *m*-cresyl ester (S)
Benzoic acid, 3,5-dimethylphenyl ester
Benzoic acid, 2,5-endomethano-1,2,5,6-tetrahydrobenzyl ester
Benzoic acid, *n*-heptyl ester
Benzoic acid, alpha-methylbenzyl ester
Benzoic acid, methylbenzyl ester
Benzoic acid, methylbenzyl ester (prepared from 3° xylene)
Benzoic acid, phenylethyl ester
Benzoic acid, *o*-tolyl ester
Benzoic acid, xylyl ester (prepared from 10° xylene)
Benzoic acid, *p*-xylyl ester
tert-Benzylborneol
beta-Benzyloxypropionic acid, ethyl ester
Benzyl phenyl ethylene glycol ether
4-Bromo-1-acetonaphthone (S)
1-Bromo-4-methoxynaphthalene
4-Bromophenyl 3-chloro-2-methylpropyl ether
4-*tert*-Butyl-2-chlorophenol
2-(4-*tert*-Butylphenoxy)2[1]-chlorodiethyl ether
N-Butyl-N-phenylcarbamic acid, butyl ester
Butyric acid, methyl-gamma-2-tetrahydronaphthyl ester
Butyric acid, 2-phenylcyclohexyl ester
Carbonic acid, *p*-chlorophenyl *n*-amyl ester
Carbonic acid, dibenzyl ester (S)
Carbonic acid, ethyl 4-*tert*-butyl-2-chlorophenyl ester
2-Carvacroxy-2-chlorodiethyl ether
2-Chloroallyl 2-xenyl ether
p-Chlorobenzoic acid, benzyl ester
x-Chloro-*o*-nitrobiphenyl
Chlorophenoxathiin (*x*-chlorophenothioxin, crude)
p-Chlorophenyl furyl ketone (S)
4-Chloro-*o*-phenylphenol (S)
3-Chloropropyl 2,4,6-trichlorophenyl ether
Cinnamic acid, isobutyl ester
Cyclopropane-1,1-dicarboxylic acid, di-*n*-amyl ester
Dibenzothiophene (S)
alpha,beta-Dibromocinnamic acid, ethyl ester
p-Diisobutylphenol (*Hesterol*) (S)
Difluorodiphenyl disulfide
1-(2,5-Dimethylphenyl)-3-ethyl-2-pentanol
Diphenylamine (S)
Di-(2-phenylethyl) ether
Diisopropyl-*o*-cresol (S)
N-Dodecylpiperidine
1,4-Endomethylene-5-cyclohexene-3-carboxylic acid, phenethyl ester
4-Ethoxydiphenylmethane
2-(1-Ethylamyl) benzothiazole
Ethylbenzylaniline
2-Ethylbutyric acid, 1,4-butanediol diester
N.-Ethyl-N-phenyl caprylamide
2-Ethyl-3-propylacrolein 2-nitro-2-ethyl-1,3-propanediol acetal
Ethylxanthic acid, ethyl ester
Fluorene (S)
Furylacrylic acid, benzyl ester (S)
n-Heptylcyanoacetic acid, ethyl ester
o-*n*-Hexyloxybenzaldehyde
2-Methallyl 3-xenyl ether
2-Methoxy-1-acetonaphthone (S)
2-Methoxy-3-chlorobiphenyl
p-Methoxydiphenyl (S)
4-Methoxydiphenylmethane
N-Methylanthranilic acid, isoamyl ester
alpha-Methylcinnamic acid, *n*-butyl ester
Methyl diphenyl carbinol (S)
2-(3,4-Methylenedioxyphenyl)-4,4-diethyl-1,3-dioxane
1-Naphthalenebutyric acid, ethyl ester
2-Naphthonitrile (S)
3-Nitro-4-aminotoluene (S)
p-(*tert*-Octyl) phenol (S)
PD-544-B (treated) (chiefly methyl- and polymethylnaphthalenes)
beta-Phenoxystyrene
(1-Phenylbutylidene)cyanoacetic acid, ethyl ester
alpha-Phenylcinnamic acid, ethyl ester
(1-Phenylpropylidene)cyanoacetic acid, ethyl ester
Phenyl thienyl ketone (S)
omega-Piperidinododecylbenzene
Piperonylic acid, *n*-amyl ester (S)
Propionic acid, *o*-*n*-propoxybenzyl ester
Salicylic acid, cyclohexyl ester
Salicylic acid, *n*-hexyl ester
Salicylic acid, phenylethyl ester (S)
Styryl *o*-cresyl ether
Succinic acid, dicyclohexyl ester
Tetrahydrophthalic acid, di-*n*-butyl ester
Thanite (thiocyanoacetic acid, mixture of fenchyl and isobornyl esters)
Thiocyanic acid, *n*-decyl ester
Thiocyanoacetic acid, chloroisobornyl ester
alpha-Thiocyanopropionic acid, dipentene monocarbinol ester
o-Toluic acid, benzyl ester
m-Toluic acid, benzyl ester
p-Toluic acid, benzyl ester
o-Tolylacetic acid, benzyl ester
m-Tolyl *p*-anisyl ether
p-Tolyl benzyl ether
3,4,5-Tribromotoluene (S)
Trichlorodiphenyl ether
4-Trichloromethyl-4-methyl-2-chlorocyclohexadien-2,5-one (S)
iso-Valeric acid, pentamethylene diester
Velsicol AR-70 (chiefly tetramethylnaphthalene)
gamma-*p*-Xylylbutyric acid, ethyl ester

[3] Solid materials indicated by (S); other compounds were liquids.

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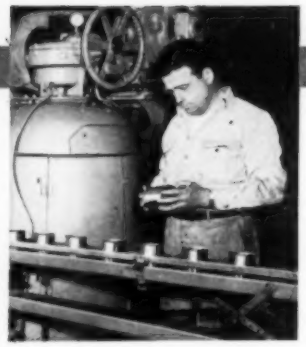
TABLE 1.—Washing, aging, and other data for 34 of the more effective acaricidal materials and benzyl benzoate, when applied to cloth samples at several dosages.

Compound and Rate of Impregnation (Grams per Square Foot) [1]	Average Stopping Time Before Washing or Aging	Number of Washings Survived		Average Days of Aging Survived		
		Minimum	Average	Outdoors	Ultra-Violet	Indoors in Dark [2]
	Minutes					
Benzene hexachloride, technical (10-12% gamma isomer) (S) [3,4,5]						
2.0	1	4	6.3	23	35	229+
.5	2	1	3	14	0	159+
.25	1	1	1	7	0	152+
.003	4	—	—	—	—	—
Benzene hexachloride (95% gamma isomer) (S) [5]						
2.0	1	18	19.3	—	—	—
.00056	9	—	—	—	—	—
Benzil (S) [5]						
2.0	6	2	4.4	13	10.5	168+
.5	10	0	1.5	7	7	143+
.25	8	0	0	7	0	159+
.0625	11	—	—	—	—	—
Benzoic acid, *p*-cresyl ester (*p*-cresyl benzoate) (S)						
2.0	8	3	7	33.6	9.3	175+
.5	10	2	2.5	17.5	0	97+
.25	8	0	0	7	7	159+
.0625	9	—	—	—	—	—
Benzyl benzoate						
2.0	1	1	2.5	14	14	256+
1.5	1	1	2.1	—	—	—
1.0	1	1	1.8	—	—	—
.5	2	1	1.1	0	0	175+
.25	2	0	.25	7	0	49
.625	9	—	—	—	—	—
Benzoic acid, phenyl ester (phenyl benzoate) (S)						
2.0	4	5	7	16.8	10.5	213+
.5	4	1	1.5	10.5	0	133+
.25	5	0	.3	7	0	14
.125	6	—	—	—	—	—
Benzoic acid, 2-thenyl ester (2-thenyl benzoate) (S) [5]						
2.0	3	4	6.7	40.6	35	207+
.5	2	2	2	17.5	3.5	167+
.25	2	0	0	7	0	14
.0625	6	—	—	—	—	—
3-Bromoacenaphthene (S)						
2.0	6	3	4.7	—	—	—
.0625	8	—	—	—	—	—
Carbonic acid, diphenyl ester (diphenyl carbonate) (S)						
2.0	5	5	8.5	42	50.8	214+
.5	5	3	3	24.5	7	165+
.25	5	1	1	14	0	148+
.0625	3	—	—	—	—	—
Carbonic acid, di-*m*-tolyl ester (di-*m*-tolyl carbonate)						
2.0	6	4	4.7	41	24.5	186+
.5	5	1	2	42	0	168+
.25	6	0	0	28	0	153+
.0625	9	—	—	—	—	—
2-Chloroethyl 2-cyclohexylphenyl ether [5]						
2.0	3	3	4.6	8.4	10.5	154+
.5	6	1	1.3	3.5	3.5	67.5
.25	7	1	1	0	0	21
.125	8	—	—	—	—	—
Desoxybenzoin (S) [5]						
2.0	2	2	4.5	22.8	19.2	216+
.5	3	1	1	14	0	165+
.25	2	0	0	7	0	14
.125	5	—	—	—	—	—
x-Dichlorodiphenyl ether [5]						
2.0	3	3	4.4	7	8.8	194+
.5	3	1	1.3	10.5	0	35
.25	4	0	0	0	0	14
.0625	11	—	—	—	—	—
2, 4'-Dichlorodiphenylmethane						
2.0	5	2	4.3	32.6	17.5	248+
.125	12	—	—	—	—	—
Dicyclohexylcarbinol (S)						
2.0	5	3	4.4	2.8	3.5	183+
.5	2	1	1	0	0	35
.25	3	0	0	0	0	—
.125	9	—	—	—	—	—
4, 6-Dinitro-*o*-cresol methyl ether (S)						
2.0	10	6	6	—	—	—
Diphenylene sulfide (S)						



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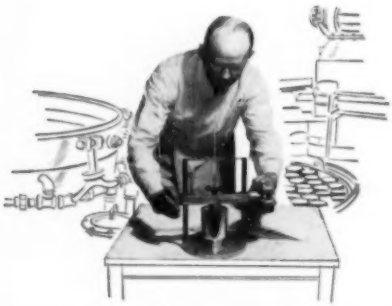

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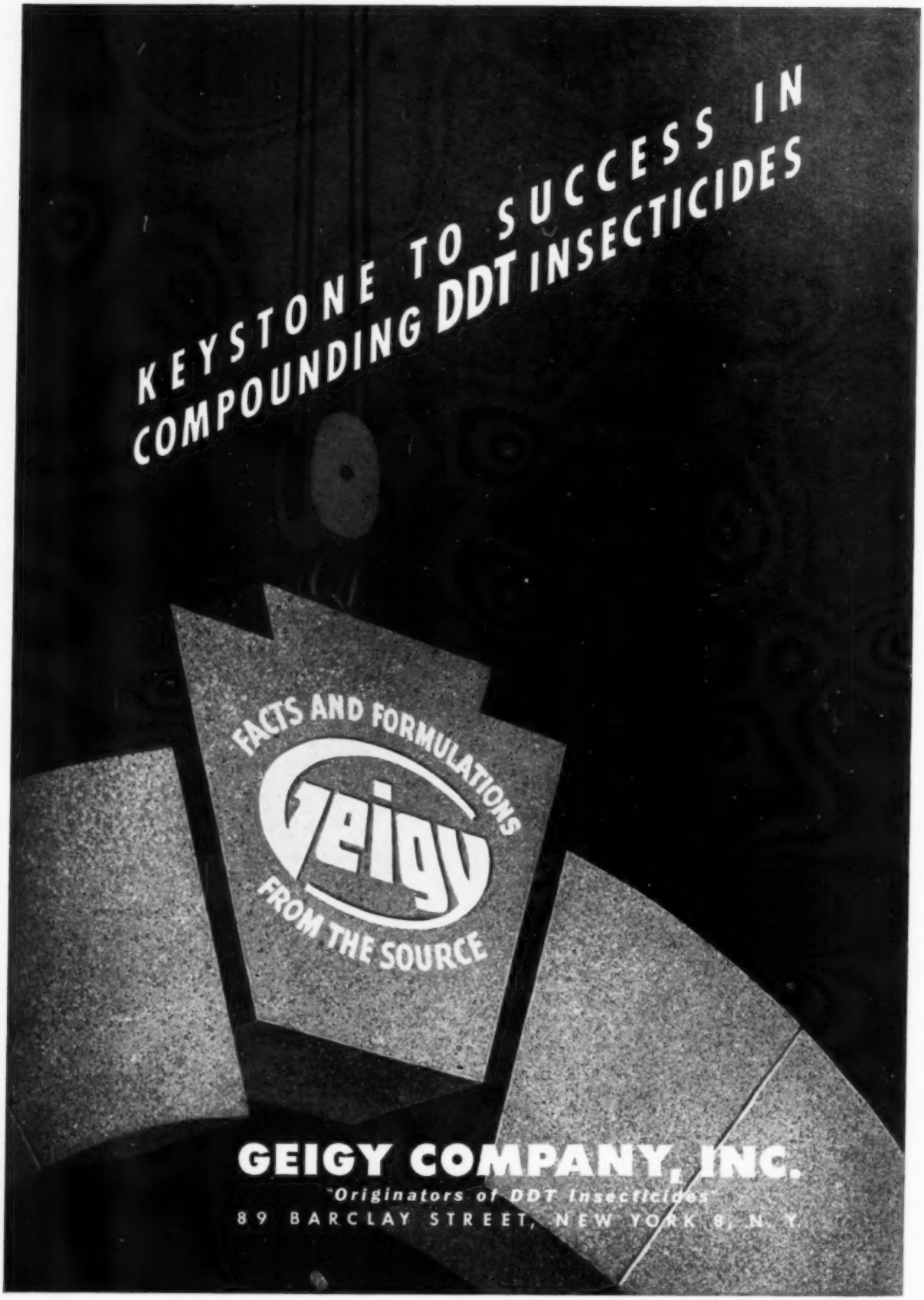
TABLE 1—Continued

Compound and Rate of Impregnation (Grams per Square Foot) [1]	Average Stopping Time Before Washing or Aging	Number of Washings Survived		Average Days of Aging Survived		
		Minimum	Average	Outdoors	Ultra-Violet	Indoors in Dark [2]
	Minutes					
2.0	7	2	5.4	22.4	19.3	209+
.5	9	3	3	14	14	159+
.25	9	0	0	0	7	21
Diphenyl nitrosoamine (S) [6]						
2.0	3	5	7.6	12.6	14	210+
.5	4	1	2	3.5	0	63
.25	4	1	1	0	0	84
.0625	7	—	—	—	—	—
Dixanthogen [5]						
2.0	3	3	4.8	12.6	5.2	208+
.5	5	2	2	7	0	92+
.25	4	0	0	7	0	139+
.0125	8	—	—	—	—	—
Hexachloro-2, 5-cyclohexadien-1-one (S) [5]						
2.0	1	3	7.4	28	18.7	217+
.5	2	1	1	21	0	175+
.25	3	0	0	—	—	—
.0625	7	—	—	—	—	—
p-Nitrobenzoic acid, isobutyl ester (S)						
2.0	3	5	5	—	—	—
p-Nitrobenzoic acid, isopropyl ester (S)						
2.0	4	7	7	—	—	—
p-Nitrobenzoic acid, 2-chloroethyl ester (S)						
2.0	2	9	9	—	—	—
p-Nitrobenzoic acid, cyclohexyl ester (S)						
2.0	4	5	5	7	0	—
p-Nitrobenzyl bromide (S) [5]						
2.0	5	4	5	8.4	21	217+
.5	5	2	2	7	0	49
.125	5	—	—	—	—	—
1-Nitronaphthalene (S) [5]						
2.0	1	4	4.7	5.6	14	198+
.5	1	0	.5	0	3.5	35
.25	2	0	0	0	7	84
.0625	8	—	—	—	—	—
Phenoxathiin (phenothioxin) (S)						
2.0	4	4	6.3	9.8	15.8	206+
.5	2	1	1.5	0	0	66
.025	4	1	0	0	0	14
.125	6	—	—	—	—	—
Salicylic acid, 2-thenyl ester (2-thenyl salicylate) (S)						
2.0	5	4	7.8	43.4	68.2	228+
.5	4	1	1.5	28	7	144+
.25	6	0	0	0	0	14
.0625	5	—	—	—	—	—
Thiocyanic acid, *p*-dimethylamino phenyl ester (*p*-dimethylamino phenyl thiocyanate) (S) [5,6]						
2.0	2	6	7.9	39.2	30.0	228+
.5	2	2	2	35	0	92+
.25	1	1.0	1	14	0	148+
.0156	7	—	—	—	—	—
Thiocyanic acid, *n*-dodecyl (or lauryl) ester (*n*-dodecyl thiocyanate) [5]						
2.0	4	3	4.5	21	8.9	205+
.5	5	3	4	28	0	165+
.25	6	1	1	7	0	148+
.0625	8	—	—	—	—	—
Thiocyanic acid, alpha-naphthyl ester (S)						
2.0	5	5	5.5	14	17.5	249+
isoThiocyanic acid, alpha-naphthyl methyl ester						
2.0	8	3	4.3	19.6	14	181+
.5	6	1	1.5	21	0	165+
.25	9	0	0	7	0	77
.125	7	—	—	—	—	—
alpha-Thiocyanopropionic acid, dipentene monocarbinol ester (hydrogenated) [3, 4]						
2.0	3	4	5.1	51.2	7	198+
.5	2	2	2.5	45.5	0	164+
.25	5	1	1	14	0	149+
Tolane (diphenylacetylene) (S)						
2.0	2	6	6	—	—	—
N-Vinylcarbazole (S)						
2.0	10	7	7	7	0	—

1 The dosages lower than 0.25 are the minimum effective dosage for fresh treatments.
2 Plus sign (+) indicates that some of the samples were still effective when the tests were terminated.
3 Solid materials indicated by (S); other compounds were liquids.
4 Has objectionable odor.
5 May be unsafe for use on clothing worn for an extended period.
6 Stains.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were highly resistant to washing but the available quantities permitted only one test each. None of the compounds withstood more than one washing at 0.25 gram per square foot; but one, *n*-dodecyl thiocyanate, withstood four washings at 0.5 gram per square foot. All the benzyl benzoate samples impregnated at dosages of 0.5 to 2.0 grams per square foot were effective after one washing, but half the samples treated at the rate of 0.25 gram were ineffective. At a dosage of two grams, six per cent of the samples failed after the second washing and 50 per cent after the third. One per cent of the two gram samples was still effective after the sixth washing.

The materials withstanding the most days of continuous outdoor aging at two grams per square foot were 2-thenyl salicylate, diphenyl carbonate, di-*m*-tolyl carbonate, 2-thenyl benzoate, dipentene monocarbinol alpha-thiocyanopropionate, and *p*-dimethylamino phenyl thiocyanate. Benzyl benzoate was effective for 14 days. The ones withstanding the most days of aging outdoors protected from rain at 0.5 gram were: Diphenyl carbonate, di-*m*-tolyl carbonate, 2-thenyl salicylate, *p*-dimethylamino phenyl thiocyanate, *n*-dodecyl thiocyanate, and dipentene monocarbinol alpha-thiocyanopropionate. With the exception of 2-thenyl salicylate and *n*-dodecyl thiocyanate, these materials were also the most effective at 0.25 grams per square foot.

In special rinsing and aging tests unwashed samples of benzyl benzoate impregnated at two grams per square foot withstood 32 days but not 40 days of exposure outdoors when protected from rain. All 1.5- and two-gram samples rinsed for 24 to 48 hours and aged under the same conditions survived 26 days, but most of the 1.5-gram samples were ineffective after 29 days and the two-gram samples after 34 days. At one-gram per square foot most of the rinsed samples withstood only 15 days of aging and at 0.5 gram the samples were ineffective.

At two grams per square foot the materials least affected by ultraviolet light were 2-thenyl salicylate, diphenyl carbonate, 2-thenyl benzoate, and technical benzene hexachloride. At 0.5 gram per square foot none of the materials withstood more than 14 days, and at 0.25 gram most of them did not withstand seven days. Benzyl benzoate was effective for 14 days at a dosage of two grams but was ineffective at lower dosages.

At two grams per square foot most of the samples stored indoors in the dark were still effective after 154 to 249 days of aging as compared with 256 days for benzyl benzoate.

All the chiggers exposed for 20 minutes to samples treated with the following materials were fully recovered within the observation time:

Carbonic acid, diphenyl ester
Carbonic acid, di-*m*-tolyl ester
2-Chloroethyl 2-cyclohexylphenyl ether
Desoxybenzoin
x-Dichlorodiphenyl ether
2,4' Dichlorodiphenylmethane
Dicyclohexylcarbinol
Diphenylene sulfide
Diphenyl nitrosoamine
p-Nitrobenzoic acid, isobutyl ester
p-Nitrobenzoic acid, isopropyl ester

Some of the chiggers did not recover after a 20-minute exposure to samples treated with the following materials: (1) benzoic acid, *p*-cresyl ester, (2) benzoic acid, 2-thenyl ester, (3) phenoxathiin, and (4) salicylic acid, 2-thenyl ester. The other materials in table 1 did not permit any of the chiggers to recover after a 20-minute exposure. Even though certain materials may permit recovery, it should not be inferred that they are inferior, because under field conditions they are as effective as the more toxic materials in preventing attachments.

The minimum effective dosages (see table 1, footnote 1) are the smallest dosages that stopped chiggers within 15 minutes on all the samples tested. Some of the samples were effective at a still smaller dosage, but on at least one sample the stopping time was more than 15 minutes. The materials with the lowest effective dosages were technical and gamma benzene hexachloride and *p*-dimethylamino phenyl thiocyanate.

Usually solid compounds were the most durable, as 76 per cent of the 34 best ones were solids as compared with 24 per cent for the least effective group. The chemical groups containing the largest proportion of the first-rate materials were thiocyanates, 15 per cent (five per cent of the entire 150 materials); esters of benzoic acid, 9 per cent; and esters of carbonic acid, six per cent.

Summary

OF 5963 materials tested for their effectiveness as clothing treatments against chigger mites, 150 were as good as or better than benzyl benzoate, the standard of comparison, when applied to cloth patches at the rate of two grams per square foot. All materials in this group inactivated the mites after two launderings, and 34 of them were effective after an average of more than four launderings. Of the latter group, 76 per cent were solids.

Some of the more effective materials withstood 40 to 50 days each of exposure outdoors and to ultraviolet light. Smaller dosages were more quickly affected by these exposures. When the better materials were applied at two grams per square foot and then stored indoors in the dark, all of them were still effective 154 to 249 days after treatment. Eleven of the 28 materials for which recovery records were obtained permitted 100 per cent of the test chiggers to recover after exposure for 20 minutes to treated cloths.

Samples of cloth treated with gamma benzene hexachloride (95 per cent) showed the greatest resistance to water, remaining effective after an average of 19.3 launderings. This compound also showed the lowest minimum effective dosage (0.56 mg. per square foot) in fresh treatments. Benzyl benzoate at dosages of 2.0 to 0.5 grams per square foot was effective after one washing but some samples failed at all dosages after the second washing.

SPRAYERS

(*From Page* 133)

The sprayer is light and flexible and may be carried on a light truck cart or wheelbarrow.

The apparatus consists of a small tank having a capacity of from

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one to three gallons; has a strainer located in the spray pipe line, an abrasive resistant pump, a pump bypass, a nozzle, valves, pressure gauge and an aluminum pressure blower. The best operating speed for the blower is 6,000 to 10,000 r.p.m. so as to deliver 120 cubic feet of air per minute at 240 miles per hour. A 2¼ inch flexible hose, three feet long and attached to a 1¼ inch nozzle, is used.

Two kinds of nozzles are recommended, either a direct pressure type designed for 40 to 60 lbs. pressure, or a capillary tube nozzle with four one-sixteenth to three-sixteenth inch hollow brass tubes sharpened at their free ends to increase the shearing action of the air blast and projecting into the mouth of the outlet from the periphery of a circular feed pipe.

For solutions and emulsions, a gear pump is satisfactory, but for suspensions, a centrifugal or plunger type pump must be used.

Other details of construction are given in the mimeographed bulletin mentioned above.

At the proper operating speed droplets of from 40 to 50 microns are generated by this mist sprayer, in applying insecticides as solutions, emulsions or suspensions. From six to 10 gallons of liquid may be applied per hour.

The sprayer has many adaptations for field and indoor uses as it is easily transportable, is powered by a small gasoline engine and applies a large variety of liquids. Since it may be used to apply wetted dusts, crawling types of insects, often killed with insecticides in this form, may be reached in normally inaccessible places.

In our discussion we have not considered the problem of spraying wetted dust in detail. This method of insecticide application is not being used to any great extent by sanitation engineers. Potentially, however, dusts are of importance. Wettable preparations of DDT are used quite extensively especially in such buildings as stables. For certain purposes the simultaneous application or blending of dust and liquid spray is desirable. This may be done, according to Potts and his co-workers, by directing a stream of dust at high velocity (up to 300 m.p.h.) against a liquid just before it emerges from a spray nozzle and is atomized. It is necessary, in order to coat the dust with spray, that while the dust and spray are driven against each other at high velocities, they be also combined for a moment in a restricted space. The dust is usually directed through short (one inch or less) hoses or pipes and the liquid nozzles are at their outlets. In cases where the liquid coated dust is carried for long distances, the nozzles and outlets are located in a large outlet through which air is discharged at low to medium velocity with a high volume blower.

We know of no manufacturer who is marketing in volume sprayers made according to the work pioneered by Potts, Spencer, Friend and others, in conjunction with the Connecticut Agricultural Experiment Station. However, their work will undoubtedly reflect itself for indoor application of insecticides as it has already attracted much attention especially among horticulturists in field work.

Further research in the sprayer field is constantly bringing improvement. Not only particle size concentration, density, rates of volatilization and similar phases are being investigated, but the more common defects, such as weight of apparatus, lack of facility for spraying in any direction, corrosion, controls of output, nozzle troubles, distribution of spray and similar difficulties are being gradually overcome. While we doubt very much if one type of sprayer for all types of insecticides will ever materialize, we do believe that simplification or standardization of sprayers is almost a realized goal. With the number of insecticide toxicants constantly on the increase, it is necessary that more efficient sprayers be constantly developed for their application.

Genetron for Aerosols

"Genetron" as a dispersant for all types of low pressure aerosols is now available, according to a recent announcement of General Chemical Division of Allied Chemical & Dye Corp., New York. The material, a fluorinated hydrocarbon, is claimed to be non-toxic, stainless, odorless, nonflammable, stable, chemically inert, and compatible with active ingredients. It is shipped in one ton cylinders.

Turner in New Quarters

Turner Products, Elgin, Ill., janitor supply house, recently moved to new and larger quarters at 1059 N. Liberty St., Dec. 10.

Frank Pollnow, Jr. Married

Frank Pollnow, Jr., vice president of Vestal Laboratories, Inc., St. Louis, was married on Saturday, January 29th to Miss Georganna Funsten at Our Lady of Lourdes Catholic Church in Clayton, Mo. The couple left for New York and a month cruise to the Caribbean immediately following the ceremony. Upon their return they will live in suburban St. Louis. Mr. Pollnow is a graduate of the University of Notre Dame in chemistry and son of Frank Pollnow, founder and president of Vestal which formerly was known as the Vestal Chemical Co.

N. Y. Bims Dine

The 1949 annual dinner of the New York BIMS was held January 27 at the New York Athletic Club, New York. Pete Forsman of the C. H. Forsman Co. presided over a gathering of 225 members and guests. Jim Layden of Hampden Glazed Paper & Card Co. acted as master of ceremonies and highlighted the evening by the presentation of the prize of the BIM-of-the-Year, Johnny Rau of F. N. Burt Co. The prize, tied with red ribbon and cellophane, was a young lady goat, scared stiff by the hooting, yelling BIMS. Other prize winners were John Owens of Lachman Novasel Paper Co., John Koczwara of Botany Mills, and Joe Scott of Swindell Brothers.

The annual N. Y. BIMS golf schedule for 1949 was announced by Mr. Forsman during the dinner as follows: June 21, Baltusrol, Springfield, N. J.; July 26, Winged Foot, Rye, N. Y.; August 25, North Hempstead, Long Island. The only other speaker was Martin Schultes, former chairman of the N. Y. BIMS, who has now returned to the wars following a short sidelining due to illness.

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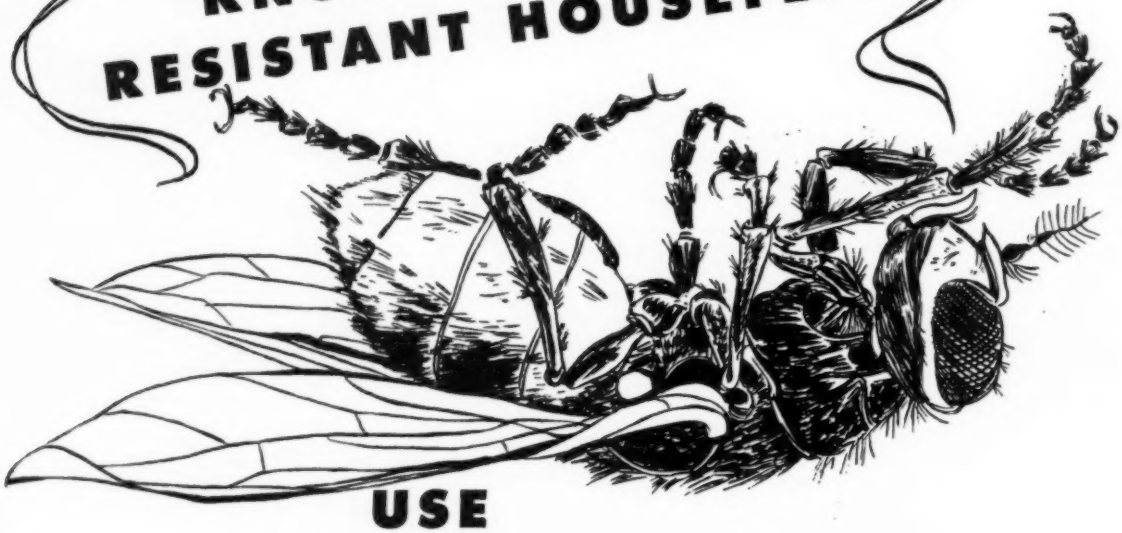

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Reports from 25 states indicate an increasing number of houseflies showing DDT-resistance. In parts of Italy, where DDT was used extensively for two full years before it was offered to the American public, this failure to completely eliminate flies after a few years of use is especially significant.

Professor A. M. Missiroli, Director of the Laboratory of Malariology and Parasitology, Rome, reports: "Two years ago DDT killed all flies, last year killed some, and this year, also with DDT applications, there are plenty of flies. On a farm, Octa-Klor (Chlordane) has been used in the barn and not in the house, which is just beside it. Flies disappeared from the barn and also from the house, which before was full of them.

Wherever houseflies are encountered—in the barn, on dairy cattle, in homes and institutions—CHLORDANE gives complete control.

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TECHNICAL BRIEFS

From Current Literature in the Sanitary Products Field

Increasing Toxicity

Addition of distillate oil or summer oil at 0.125-0.5 gallon per 100 gallons of spray, markedly increased the toxicity of *gamma*-benzene hexachloride to a number of insects. C. V. G. Morgan, *Can. Entomologist* 79, 109.

Dairy Disinfection

In the dairy industry, disinfection of metal surfaces is a constant problem. It has been shown by experiments with artificially infected tinned trays that pH is not an important factor in determining germicidal efficiency. At pH 10 and 11, sodium hypochlorite solutions had almost identical germicidal efficiency as at pH 7. Addition of a wetting agent to this disinfectant used as a spray solution made it more efficient than a rinse. Hypochlorite solutions containing 0.2 per cent of milk had no effect on its germicidal efficiency.

Hydroxy biphenyl has also been found useful for the disinfection of surfaces. Its effectiveness is combined with cheapness and absence from toxicity. A dilution of 1:3,000 is lethal to *Bact. coli*, and 1:2,500 to *Staph. aureus*. Metal surfaces could be sterilized with dilutions ranging from 0.02 to 0.01 percent. *Manufacturing Chemist 19*, 465 (1948).

Sterilizing Medium

Oils used to sterilize dental hand pieces are not too satisfactory because of their tendency to decompose and produce objectionable odors at the temperatures required. However, a silicone fluid manufactured by the Dow Corning Co. has all of the desirable features and none of the objectionable properties of oil. The fluid gave no odor after being held at 300°F. for more than 1,500 hours. It has a flash point of 600°F. Tests showed that *B. subtilis* were killed when the fluid was held at a temperature of 300°F. for 10 minutes, but not for five minutes. Other organisms are being tested.

Laundry Germicides

Sterilization of clothing washed in mobile Army laundry units presented a real problem during the recent war. Methods were studied of reaching the same sanitation level that could be achieved in ordinary laundry procedures, using high temperatures and hypochlorite bleach. At the same time, the limitations of the mobile laundry unit concerning the necessity to conserve heat, water and time, had to be borne in mind, Also the method should not have a deleterious effect on woolens or on dyed fabrics.

The request by the Office of the Surgeon General for such a process was predicated on the belief that attaining a sufficiently low count of microorganisms in the laundering process would have marked advantages in preventing cross-contamination of clothing during the laundering operation. For instance, an outbreak of ringworm among American troops stationed in Ireland was attributed to the reissue of clothing which had become cross-contaminated through poor laundering practices.

Preliminary studies eliminated several important classes of germicidal materials. Chlorine-active organic compounds appeared promising. Of several chlorine-active chemicals studied, only "Monochloramine B" possessed the right solubility, pH, nonfading effect, and chlorine-liberating characteristics that were practical, as determined by tests in the laboratory. Temperature, time of exposure, and pH are factors governing germicidal power of this chemical when used for laundry purposes.

It was found that at pH 5.0 as little as 25 p.p.m. of available chlorine in laundry solutions containing moderately high amounts of organic material, will kill *Staph. aureus* in five minutes at 38°C. Field trials of "Monochloramine B" in a mobile laundry unit at Camp Lee, Va., confirmed the laboratory findings to a remarkable degree. This was evidenced by greatly reduced counts of artificially infected swatches of fabrics laundered with solutions of "Monochloramine B," and by greatly reduced counts of the wash and rinse waters. While detailed studies looking to establishing optimum concentrations of the chemical for the job to be done were not undertaken, it was found that about eight ounces per 60 gallons of water, used in the second clear water rinse, yielded the best results. The Navy has adopted this procedure as part of its Specification 37-R-3, dated June 19, 1944, covering the renovation of Navy Special Clothing.

Excessive amounts of the chemical at low pH values, as in the sour operation, will cause fading or bleaching, and could result in loss of tensile strength. No special studies on loss of tensile strength were made. The work suggests the possibility of using "Monochloramine B" in commercial laundries in cases of emergency, although under normal conditions, commercial laundries rarely need a germicide. Cotton fabrics showed a greater tendency to fade than 50:50 cotton: wool fabrics. A third rinse would reduce the chemical content to a safe level in the sour stage to overcome this difficulty.

The studies indicated that "Monochloramine B" is equally effective when the detergent used is soap or anionic synthetic detergent. T. H. Vaughn, A. L. Sotier, E. F. Hill, J. E. Simpson and W. M. Lee, *Ind. Eng. Chem. 40*, 2054-9 (1948).

Influence of Air Currents

Exposure to air currents markedly decreased the effectiveness of the more volatile insecticides such as benzene hexachloride and chlordane, slightly reduced that of the less volatile chlorinated camphene, and had no effect on the nonvolatile DDT. G. G. Dustan, T. Armstrong, and W. L. Putnam, *Can. Entomologist 79*, 45-50.

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Control of Airborne Infection

ABOUT a third of the man-hours lost to industry in the U. S. is caused by respiratory diseases. This loss can be reduced considerably by adopting some means of dust control and air disinfection. A differentiation should be made between air sterilization and air disinfection. The former necessitates complete elimina- of all airborne bacteria and may be necessary only in such places as hospital operating rooms, breweries, or certain drug manufacturing processes, while air disinfection reduces and controls the numbers of airborne bacteria to a figure which can be dealt with by the natural powers of the average worker. Control can be achieved by (1) floor oiling, (2) ultraviolet radiation, and (3) aerosol spraying.

Floor Oiling

BACTERIA are mainly associated with dirt and dust, so any means whereby this dirt and dust is fixed and prevented from rising and polluting the atmosphere is a help in controlling cross infection. Use of a sweeping preparation falls in this category. Sand or sawdust mixed with calcium chloride, which keeps the mass moist and effectively gathers up dust and by osmosis kills bacteria, has been used. The results are only temporary, however, and better results are obtained when the sawdust has been mixed with a liquid paraffin containing a suitable germicide.

Possibly the most pleasant sawdust to use is one derived from pine, as it is aromatic, but other wood dusts are suitable, and may be blended with a germicidal essential oil to leave a pleasant odor. Better control may be achieved by spreading spindle or other oil over the floor, using an oily rag or mop. This method reduced infection in an Army Barracks from 3.8 per cent to 0.7 per cent, while use of floor oiling and other anti-dust measures, including treatment of bed clothes and other fabrics with a technical emulsion of white oil, reduced the bacterial count in a hospital ward by 97.5 per cent. As to floor oils, phenol is a germicide in kerosene, and there are other substances which retain this preperty in a hydrocarbon oil base.

Ultraviolet Radiation

USE of ultraviolet radiation has reduced respiratory diseases by 25 per cent in a Naval Barracks, but dangers may rise from excessive exposure of the eyes and skin. A further drawback is the high intensity which is required. This increases cost and the process may prove more expensive than other methods. It is advisable also that the atmosphere should be free from dust, since this effectively stops the rays from penetrating and killing bacteria on dust particles further away from the source. Hence the best results are obtained when used in conjunction with an air-conditioning plant.

Aerosol Sprays

TRUE aerosols exhibit Brownian movement; they are always in motion and do not settle. Since they are so minute and light, the small currents present even in the air of a closed room, are sufficient to keep them in continual motion and change of position. Aerosol particles do not wet surfaces with which they come in contact. An aerial disinfectant should have low vapor pressure, stability, and solubility in water. Lactic and mandelic acids conform to this; lactic acid kills over 90 per cent of organisms in sprayed saliva in five minutes at a relative humidity of 70 per cent at 60-70°F.

Aerosols are usually produced by breaking up a liquid by mechanical means into particles of the required size. Propylene and triethylene glycols are suitable liquids. Their bactericidal powers are increased by dissolving resorcinol, hexyl resorcinol, or other similar substances in them. As would be expected, droplet spray infection is more susceptible than dust-borne infection, to the action of glycols. Instantaneous killing of bacteria may be obtained by a concentration of triethylene glycol of 0.003-0.005 mg. per liter, or 0.1-0.2 mg. per liter of propylene glycol. Optimum effectiveness is brought about by a relative humidity of 35-45 per cent.

The bactericidal action of the aerosol, harmless to humans in the concentrations used, appears to be mainly due to collisions between the airborne microbe and the aerosol particles, an effect enhanced by use of an electric fan to drive the antiseptic aerosol across the room. Best results have been obtained when the size of the aerosol particle is of the same order as that of the bacteria to be attacked. This is usually five to 100 microns. The time and concentration are important. For example, propylene glycol at a concentration of 1:100,000,000 gave 50 per cent kill of bacteria in 10 minutes, 82 per cent in 30 minutes. At a concentration of 1:10,000,000, it gave 99 per cent kill in 10 minutes, 100 per cent in 30 minutes.

The mechanism of aerosol action is not completely known, but most facts are explained by the evaporation of the volatile constituents, leaving the solid or nonvolatile ingredient behind to provide a coating on the bacterial cell which is impermeable and thus sterilizes it. Aerosols are not selective and kill a wide range of organisms, including anthrax bacillus, *B. subtilis*, *B. coli*, *B. dysenteriae*, *B. prodigosus*, *B. parathybosus*, *Staphylococcus aureus*, haemolytic streptococci, *B. pyocyaneus*, pneumococci, and tubercle bacilli. G. V. James, *Soap Perfumery, Cosmetics* 21, 793-5 (1948).

Discuss pH Evaluation

The use of pH measurement as a tool for evaluating the effectiveness of regeneration and rinsing of anion exchangers in the treatment of water supplies was suggested in a recent paper presented before the eighth annual Water Conference of the Engineer's Society of Western Pennsylvania. "Some Practical Aspects of Deionization," was given by Joseph Thompson and Francis X. McGarvey of Resinous Products & Chemical Co., Philadelphia.

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use of mask and protective clothing. This presented no special problem as greenhouse operators have long been familiar with the use of highly toxic chemicals for insect control, including such fumigants as HCN and concentrated vapors of nicotine.

The need for special safeguards in applying tetraethyl pyrophosphate in aerosol form removed restrictions in reference to the toxicity of the propellent gas used with it and simplified the formulation of appropriate aerosols. Tetraethyl pyrophosphate and the commercial material referred to as hexaethyl tetraphosphate are readily soluble in methyl chloride. No auxiliary solvent is therefore required. Suitable and effective particle sizes could be produced by using 10 percent of the commercial hexaethyl tetraphosphate which contained up to 20 percent tetraethyl pyrophosphate (the active ingredient) and 90 percent of the propellent methyl chloride. Aerosols for greenhouses with this formula are now in common use. More recently experimental work has shown that by using the product now available containing up to 40 percent of tetraethyl pyrophosphate, the ratio between the propellent gas, methyl chloride, and the non-volatiles can be 95:5.

The toxic nature of these aerosols for use in greenhouses introduced administrative problems in reference to licensing, labeling and distribution. These have all been met through cooperative effort. The pattern developed can no doubt be extended to other chemicals that are highly toxic to warm blooded animals but especially promising for the control of many common greenhouse pests. The new insecticidal chemical parathion is one now receiving particular attention. This organic material differs from any other insecticide tested to date as it has been found to be toxic toward a large number of unrelated insects which has not been true with other organic insecticides. It has been found to be toxic toward all of the insects affected by DDT and tetraethyl pyropyrophosphate and in addition such diverse species as leaf rollers, Surinam roaches, cyclamen mites, mealy bugs, and certain species of snails. Its residues possess a prolonged fumigating action which is toxic to aphids, spider mites and roaches for several days to nearly a month. It has been tested against a wide range of plants grown in greenhouses and appears to be noninjurious except to a few varieties of roses and chrysanthemums. However, because information is at present inadequate in regard to the health hazard of this toxicant it has been approved only for use on ornamentals in greenhouses.

The combination of two highly toxic chemicals tetraethyl pyrophosphate and methyl chloride also presented problems of packaging and finding a type of container which could be used for shipment of the finished bombs. Specifications have been perfected and for the present permits are being issued licenses.

The development of these types of greenhouse aerosols has meant much to the greenhouse industry which annually produces roses valued at $400,000,000, which is approximately 40 percent of the income from ornamental crops. Recent surveys have shown an improvement in quality of blossoms together with an increase in production of 10-30 percent, depending on the condition of the greenhouse crops prior to treatment. The rapidity and ease with which effective insect control can be attained and the great saving in labor—a reduction from 28 man-hours to 10 minutes—would seem to foretell even more general acceptance and wide scale use of greenhouse aerosols.

Field aerosols. Gas propelled aerosols have also been developed for field use. Here, however, the progress has not been so marked. Effective formulations have been devised for use against certain truck crop pests, the most notable through the application of DDT for the control of pea aphid. With further work in this field in perfecting formulations, distributing devices, methods of servicing and shipping the product, we may expect considerable expansion in this method of applying insecticides. However, in more exact terms much of the field use of gas propellents falls in a category other than aerosol. Particle size studies show that these so-called aerosols are actually gas-propelled liquids. As is to be expected, best results can be secured when the toxicant remains in part on the plant and is distributed among the foliage, rather than into space.

General comments. Interesting and significant have been the developments in the use of gas under pressure as a method of applying insecticidal chemicals but there is still much that awaits further research. The need for better methods of testing and determing results is especially pressing. Considerable progress has been made in this direction. More should be forthcoming with the recently inaugurated, cooperative procedures to exchange the results secured by various laboratories and to discuss and appraise techniques used.

The formulas that may be used effectively to kill insects in airplanes and still be safe and free from reasonable objections by passenger and crew still require much study. Along with this, and a part of the same problem, is the perfecting of devices for the release of measured dosages in various parts of the plane. In this field the cooperative approach also will do much to attain desired results. The rapidity of air travel and the ease with which insects, which transmit diseases to man or economic plants, can be transported emphasize the importance of the problems which await solution. The progress of the last six years suggests that the future has much in store for the use of liquefied gas propelled insecticidal aerosols as one of the methods man will use in his war against insect pests.

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LIQUID SOAP SPECIALISTS

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AASGP MEETS

(*From Page* 40)

in the light of accumulated technical information now available with regard to surface active agents.

After reviewing the conditions under which soap is used in the commercial laundry, the speaker stated that specifications relating to composition of soap were relatively satisfactory before the war when fats and oils used in soaps were more or less standard. Today, however, Mr. Smith said, there is evidence that some of the soaps which meet A.S.T.M. specifications may not have the detergency efficiency of similar soaps manufactured before the war.

"Laundry operators believe that even with high titer soaps they can detect differences in soap consumption requirements, sudsing efficiency, suds stability and detergency between various brands of the same type of soap," Mr. Smith declared. "When we consider the case of low titre soaps there can be no doubt as to observable differences in color and odor, and probably in usage and detergent efficiency between different brands," the speaker added.

In discussing conditions which give the best results with soap, based on actual experience of the laundry industry, Mr. Smith made these observations:

"Soap cannot be used at pH values much below 8.5 because of the formation of acid soaps or fatty acids, but the best detergent range for cotton washing seems to lie between pH 11.0 to 12.0. More information is needed as to the relationship between pH and detergency.

"Alkali concentrations must be controlled within reasonably close limits to give proper soil removal and to prevent excessive re-deposition of suspended soil. It is possible that variations in neutral salt concentration may also produce comparable results.

"Certain alkalis appear to give good results in the washing process, while others seem to be difficult to use under the same conditions of temperature and concentration. The polyphosphates appear to act as soap extenders and possibly aid in the suspension of soil. Much more information is needed as to the effect of various anions on the washing process.

"There must be temperature ranges which are most suitable for soaps of different titer, but the information in this respect is only very general and not specific.

"The amount of suds present in a washwheel is very generally used as an index of effective soap concentration. However, the detergency resulting at any given suds level is probably influenced by variations in the amount and type of soil present in suspension. Very little is known with respect to this relationship.

"Detergency appears to increase as the temperature of the washing process is raised and this is probably true even in the temperature range above 160° F. where tallow soaps rapidly lose their sudsing properties. More information on the rates of soil suspension and soil re-deposition in this temperature range is needed.

"The laundry washing process contains many variables and when such a process is studied by more or less empirical methods, then extraneous or even harmful factors may remain in the process. The proper sorting out of these factors involved requires a knowledge of the physical chemistry of surface active agents which the soap industry should be in the best position to supply."

"The Problems of Rug Cleaning," the second paper on the bulk soap panel, was presented by E. A. Leonard, assistant chief, product engineering laboratory, Alexander Smith Carpet Co., Yonkers, N. Y. He began by enumerating the more popular types of floor coverings, their methods of manufacture and materials used. Soiling and the six factors involved in cleaning: detergency; resoiling; pile distortion; color bleeding; odor and mold growth and shrinkage were next taken up. Methods of cleaning mentioned and described by the speaker included: dry dusting or beating; shampooing; dry cleaning, powder cleaning and location cleaning. The latter method may employ either powder or liquid cleaning materials. Following a discussion of the principal cleaning methods mentioned and their relationship to the six factors considered in rug cleaning, Mr. Leonard described the action taken by the technical committee of the Carpet Institute to study the variables in location cleaning problems. He also mentioned the joint program of the Carpet Institute which, with the National Institute of Rug Cleansers, has undertaken a joint program of research. In connection with the work done by rug industry groups, Mr. Leonard observed that:

"The findings of the studies made are that detergency and resoiling in location cleaning are not related and that an excellent detergent may be entirely useless for location cleaning by virtue of its high resoiling tendency. This is true of liquid non-ionic detergents and a liquid cationic detergent. What appears to be the best location cleaning material is a neutral alcohol sulfate, which dries to a light powder and is easily vacuumed from the pile of the cleaned carpet. It has good detergency for this work.

"The picture does not look good for soaps in this field, both because they leave an odor which is peculiar to soap and because on acidic wool pile, which most carpets have, evidence is available to show that the soaps break down to fatty acids which have an extremely high resoiling tendency. The soap manufacturer should certainly be aware of the requirements of rug cleaning in order to direct his own thoughts and activities reasonably and effectively on the development or sale of materials for this purpose."

Mr. Leonard concluded his discussion by showing a number of rug samples cleaned with various types of cleaning compounds, comparing the samples with the original carpeting and carpeting that had not been cleaned.

The final speaker at the bulk soap group, H. C. Borghetty, director of the textile chemistry division of General Dyestuff Corp., New York, began by giving some historical back-

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ground on the textile industry and the important uses of textile both in war and peace. He listed the three main groups of textile fibres: animal (such as wool and silk); vegetable (cotton, flax, etc.) and artificial (synthetics such as rayon, nylon, etc.).

Methods of scouring and cleaning the three main types of fabric were described, the scouring solution in the wool processing operation using soap (or substitute) and soda ash, while in cleaning cotton a solution of caustic soda and emulsifying agent is used in the boil stage, followed by the bleaching stage in which synthetic detergents, peroxide and alkali are employed. Rayon fibres and fabrics are scoured with a solution of synthetic detergent.

While synthetic detergents are versatile and have their place, Mr. Borghetty declared, soap is best for the textile industry. In the wool scouring operation, soap is the ideal detergent, Mr. Borghetty pointed out. He concluded by stating that textile mills are not as much interested in laboratory results in evaluating detergents as they are in performance under actual operating conditions. Soap and detergent manufacturers must understand the particular mill's operation in order to sell the textile industry.

The economic recovery of Germany in the past year was described by Lieutenant General L. H. Brereton, Overseas Service Corporation, Washington, D. C., in his address at the luncheon session on Jan. 27.

Synthetic Detergent Panel

A SYNTHETIC detergent panel opened with the paper "Synthetic Detergents by Type—Anionic, Cationic, Non-ionic," by Lee D. Callans, General Aniline and Film Corporation, New York. The anionics are the most familiar of the detergents to the housewife, and with respect to detergency, are superior to the nonionics and the cationics. They appear in granular form and produce copious suds in hard and soft water. Nonionics are good detergents in the liquid form, but as liquids the usual problems in packaging would be encountered. Although they do not foam as copiously as the anionics, the foam seems to satisfy the housewife, and research is underway to improve this property. Cationics (discussion limited to the quaternary ammonium salts), the third type of synthetics, are relatively inefficient detergents and are now recognized as bactericides and gaining wide recognition in sanitation.

All of the detergents lend themselves to favorable action with builders. As regards skin irritation, no general statement can be made in reference to the anionics and nonionics. The cationics, however, are strongly irritant in concentrated form. Mr. Callans concluded his paper with a discussion of Dee-4, a recent laboratory development based on a liquid non-ionic and designed for automatic washers which operate at highest efficiency with a detergent of minimum suds.

Billion Lb. Detergent Use by '52

LAWRENCE H. Flett, National Aniline Division, Allied Chemical & Dye Corporation, New York, reviewed the developments of synthetic detergents in his paper "Dynamic Expansion of Synthetic Detergents." In 1943, when the detergent output was 70 million pounds, the 1948 forecast was placed at 450-500 million pounds. This prediction has proved to be somewhat conservative, since the production figures for the past year, when completed, are expected to be well over 600 million pounds.

Detergent sales have been increasing not only because of their lower prices, and the advantages offered, but also because of the increasing market. Possible future applications may include the cleansing of washable paint and wallpaper, unwashable fabrics and the washing of streets to reduce filth, bacteria and disease. At present, the 1952 output of detergents is predicted to be more than one billion pounds.

In a paper, "Tailoring Synthetic Detergents," J. C. Harris, Monsanto Chemical Company, St. Louis, discussed the addition of compounds to detergents to impart particular properties, thus increasing their value. The original detergents were generally free of salt or sodium sulfate, but textile processors found that these could be improved by adding soda ash, following which the building of the surface active agents which followed was a natural step. Alkaline materials, as modified soda, soda ash and phosphates such as tetrasodium pyrophosphate were added to improve the effectiveness of the agents. The addition of CMC (carboxy methyl cellulose) to prevent redeposition is now fully recognized by the trade, and its use will depend on further cost reduction.

Mr. Harris reviewed the additional work carried on to improve the detergents. The goals of current research are to build into detergents those compounds which will impart such properties as preventing redeposition, and improving whiteness; also to build the most effective light and heavy duty cleaners at minimum cost and control of lather.

Detergent Limitations

DISCUSSING recent sharp increases in sales of synthetic detergents, H. E. Bramston-Cook, Oronite Chemical Co., said, "It is not be expected that this rate of expansion will be maintained indefinitely since rational limitations will be imposed by consumer preferences for soap, particularly in the case of heavy duty uses, in soft water areas, and the economic pressure of low fat prices in the realm of heavy duty synthetics versus built soaps."

Reduced costs and improved heavy duty detergency may be effected, the speaker indicated, by the use of lower active ingredient content synthetics now available. Price reductions in the basic hydrocarbons from which the synthetics are made have also helped the downward trend in synthetic detergent costs. Further such price reductions are in view, he indicated.

Soap Fats Approach Pre-War

ACCORDING to Charles E. Lund, U. S. Department of Commerce, who spoke on "Market and Prospects for Fats and Oils," the world supplies are now approaching

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pre-war levels. "It is no longer a question of how to produce sufficient soap to meet minimum requirements; it is much more a matter of where to expand markets both at home and abroad." The per-capita consumption of soap shows only a small upward trend with the rise in population; price and quality will be the determinants of sales in 1949.

There is still a world shortage of fats, particularly edible fats. Export controls expire June 30, 1949, under present legislation and some provision for action after that date should be made. George A. Prichard, U. S. Department of Agriculture presented the fat and oils outlook in his paper "Foreign Requirements and Allocations." Allocations out of the United States are sent only to ECA countries and must be approved by congress before announcement. Supplementary allocations must also be approved by the legislation after a thorough review of conditions and requirements.

Better Oil Supplies in 1949

RUSSELL Kifer, Office of Foreign Agricultural Relations—USDA, presented the paper titled, "Supply and Availability of Foreign Oils." World production of fats and oils in 1948 is estimated at 20,800,000 short tons of fat, about 4 per cent less than the pre-war level. This figure includes oils of all types, edible, drying, etc. In 1949, total production for fats and oils should be at pre-war levels; this does not mean, however, a return to the level of supplies available for foreign trade which existed before the war. The geographic location of supplies has changed, and their availability is further limited by trade agreements, restrictions on movement, control of foreign exchange and international agreement. Mr. Kifer reviewed the export situation of the oil-supplying countries and said that the supplies of most oils needed by the United States should be available for import.

According to the report, "ECA Requirements and Program," by Kenneth Mainland, Economic Cooperation Administration, ECA countries are interested particularly in the edible oils and have not imported any large amount of soap. During the forthcoming year, the ECA countries expect a consumption of 89 per cent of

AGRICULTURE SECRETARY BRANNAN

the fats used in 1934, at which time their populations were 10 per cent lower than today. By 1952, with an expected population increase of 14 per cent, a consumption of 110 per cent of the pre-war oils is predicted.

Secretary of Agriculture, Charles F. Brannan, speaker at the annual AASGP dinner, said that we do not have enough fats and oils over and above our own needs for all foreign requirements, which is one of the reasons why President Truman has asked for an extension of the export controls which expire June 30, 1949. "If export controls are continued, we can continue to safeguard adequate fat and oil supplies for our own use at home; and if this is done successfully, any possible need for domestic allocations or distribution controls will obviously be minimized or eliminated entirely."

TOXICITY

(*From Page* 129)

Dr. Joseph V. Klauder is the dermatologist reporting on the skin irritation and sensitization studies in these experiments.

The author wishes to express his appreciation to the Chief and staff of the Division of Pharmacology of the Food and Drug Administration for their kindness and guidance during the course of this investigation.

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Prentiss Sells Interest

Richard J. Prentiss, president and principal stockholder of R. J. Prentiss & Co., New York, has announced the sale of his interest in that company to Harold King, Charles Hermann, John W. Purcell, J. Miller, and A. W. Bevernick, all associated with the firm for some years past. R. J. Prentiss & Co. was incorporated in 1931, having at that time bought out W. Benkert & Co., New York drug brokers. The company will continue to manufacture its full line of drug, chemical and insecticide specialties at its two plants, Brooklyn and Newark, N. J. New officers of the firm are Harold King, president; Charles Hermann, John Purcell and A. W. Bevernick, vice-presidents. J. Miller will continue as secretary-treasurer. There is no change in personnel.

Mr. Prentiss will continue to act in an advisory capacity.

Hopkins Canco V.P.

Harry C. Hopkins, general manager of purchases since 1944 for American Can Co., New York, was recently named vice-president in charge of purchasing and traffic. He has assumed the duties of Albert T. Pfeltz, who died Jan. 4. Mr. Hopkins has been with the firm since 1925.

Merck Advances Frolich

Dr. Per K. Frolich, director of research and development for Merck & Co., Rahway, N. J., was recently appointed vice-president for research and development. He has been with the firm since Dec., 1946, having previously been connected with Standard Oil Development Company of New Jersey as director of the chemical division of Esso Laboratories.

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Boyle-Midway Changes

The advancement of three sales executives was announced last month by Boyle-Midway, Inc., division of American Home Products Corp., New York. Clifford A. Stoeckle has been appointed sales manager of a newly created northern sales region which includes territory in western New York, western Pennsylvania, northern and central Ohio, Michigan, West Virginia and eastern Indiana. He is succeeded in his former post as sales manager of the northern and central Ohio division, with headquarters in Cleveland, by W. J. Bloom. Harry A. Clohosey was named Michigan division sales manager.

CAUSTIC SODA

(*From Page* 49)

than a half million tons.

The more recent deficit in productive capacity was due to the failure of both sources of supply to expand significantly after 1943, and the extraordinary civilian demand which appeared almost as soon as the war ended. Although capacity for producing electrolytic caustic was increased over 250 thousand tons after the war began, the War Production Board early in 1942 planned an additional expansion totaling about 375 thousand tons, represented by 12 plants. However, less than three-quarters contributed to the supply as there appeared to be no need for all. By the end of 1944, WPB announced that there was an adequate amount for all military and civilian requirements. The operating capacity of electrolytic caustic had doubled from the 1939 level and caustic made by the lime soda process was the maximum consistent with the availability of soda ash.

Both segments of the caustic industry expanded shortly after the end of the war. Particularly was this true with the chlorine branch. Government plants were leased, purchased and remodeled. By 1947, nearly 1.4 million tons of the electrolytic product was available, nearly three times the amount made 10 years before. It is expected that a capacity of over 1.6 million tons will be in operation this year.

Caustic soda has been made from domestic soda ash ever since 1884 when the industry was established at Syracuse by what is now the Solvay Division of Allied Chemical and Dye Corp. Uses were relatively few, the more important being soap, lye, chemicals and mercerized cotton. With the development of the soda process for digesting wood, a new market was found, which was an added inducement to such users to provide production for serving their own needs by the electrolytic process. By 1917, about nine pulp makers were recovering caustic from cell liquor. However, the great stimulus to production was generated by the war. Picric acid was needed in large amounts for explosives. Because of the use of caustic in the phenol synthesis, the basis of picric acid, an immediate shortage of caustic developed. Production nearly doubled and the necessity arose in 1918 to reduce the consumption in non-military uses.

With the abrupt end of hostilities, a large over-capacity was apparent. As with so many other chemicals at the time, new and expanded uses materialized. The rapid development of viscose products such as rayon and cellophane, the automobile requiring caustic for petroleum operations and reclaimed rubber, and the development of the domestic chemical and resin industry became of major importance. Thus, in 1920 the duPont Fibersilk Co. joined American Viscose Co. in the rayon field. Four years later, the duPont Cellophane Co. was in operation. Within a few years as much caustic was consumed in these products as in soap. This was even more strikingly true respecting the effect of the automobile. For the past 10 years, the largest consumption of caustic has been in the fields of viscose products and chemicals, each taking slightly more than 20 percent of the total consumed. Other uses have continued to increase so that the leading share which soap enjoyed 20 years ago has been reduced to five percent of the total.

Originally the ammonia-soda producers dominated the industry. Besides Solvay, there were the Wyandotte Chemicals Corp., Mathieson Alkali Works, the Columbia Chemical Div. of Pittsburgh Plate Glass Co., and Diamond Alkali Co. Many others followed. By 1913, there was a serious overproduction of soda ash and the subsequent demand for caustic was regarded as an unwelcome processing necessity preferably satisfied by the electrolytic liquor. This source began primarily as an operation for making chlorine and the resulting caustic was regarded as an extra source of revenue. It was a profitable business so long as the war lasted. As competition developed, it became increasingly necessary to find outlets for the cell liquor. Because this contained undecomposed common salt, it was unsuitable for viscose and most chemicals production, while still of value to textiles, petroleum, rubber and pulp operations. This stimulated the successful investigations to improve the product. By the early 1930's, electrolytic caustic was a serious threat to the soda ash by-product. Presently, two-thirds of the caustic made derives from the electrolytic procedure.

Perhaps it is not known who first recovered a salable caustic from cell liquor. Among the earliest may be mentioned such essential "commercial" producers as Hooker Electrochemical Co., Pennsylvania Salt Manufacturing Co., Mathieson Chemical Co., Isco Chemical Co., Niagara Alkali Co., Stauffer Chemical Co., and Dow Chemical Co. Of the pulp and paper group earliest producers are the Brown Co., New York and Pennsylvania Paper Co., Champion Fibre Co., and Oxford Paper Co. Presently, three plants make caustic only from soda ash, about 53 produce only electrolytically, and six employ both procedures.

SOOT REMOVERS

(*From Page* 48)

mixed together until a uniformly colored powder is produced. It should be packaged in covered cans. The mixture is inflammable and should be handled accordingly.

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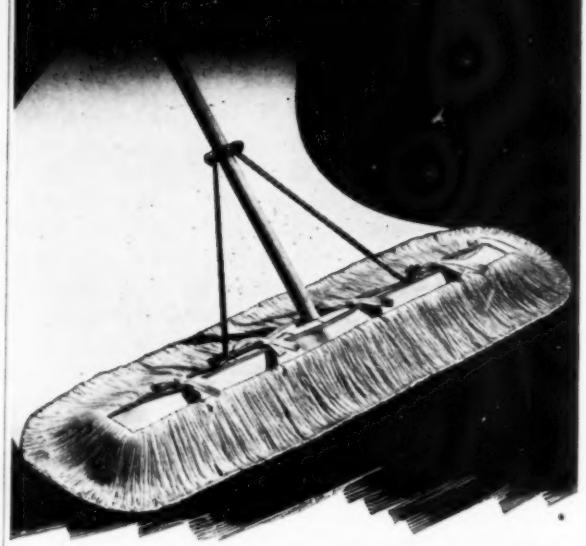

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is the soot remover recently listed by Bennett:(21)

Ultramarine blue	1.00 parts
Flowers of sulfur	6.25 parts
Potassium nitrate	23.75 "
Sodium chloride	69.00 "

A number of authorities (2, 4,11) have stated that mixtures of dry red lead or dry white lead (lead carbonate) with common salt make very effective soot removers. Indeed, Nicholls and Staples found that such mixtures were more effective than any proprietary compound sold at the time of their study. They also pointed out that these lead preparations are poisonous and must be handled with great care. If a lead compound were included in a commercial product, a "poison" label would probably be required.

Although it is not common and probably not advantageous from the cost standpoint, it is quite possible to make soot-removing powders without the use of salt. For example, a mixture, like the following,(18) will serve as a soot remover and chimney cleaner:

Ammonium chloride	10 lb.
Sulphur	3½ lb.

It is advised that too large a quantity of this compound should not be used at one time.

The patent literature offers a number of examples of soot removers, but it can hardly be called a rich sorce of information on these products. A review of the earlier British and American patents is included in the report by Nicholls and Staples. A contemporary Canadian patent (23) describes a soot-removing composition that does not differ materially from other standard type products. It is made from:

Table salt	285 lb.
Powered zinc	14 lb.
Powdered hard coal	6 lb.
Powered charcoal	3½ lb.

A later patent (24) describes a quite different type of preparation. Called a soot-consuming composition, it comprises 77 per cent of lead oxide and 33 per cent of sodium chloride intimately mixed in dry form. Powdered charcoal, coke or sawdust may be included in the product for bulking purposes.

Liquid Soot Remover

A TYPICAL method for making a modern liquid type soot remover for use in oil-burning furnaces is given in the patent granted to Adams, Ovitz and Wiley.(25) They had discovered that the problem of soot removal, soot prevention, or both, could be solved effectively by adding to the fuel oil certain oil-soluble compounds which are volatilized by the heat of combustion. When deposited on the soot these compounds cause a lowering of the ignition temperature of the soot and thus facilitate its burning—as with other types of removers.

These effects are obtained by using the copper, calcium, lead and zinc derivatives of oil-soluble petroleum acids, especially sulfonic ("mahogany") and naphthenic acids. The effectiveness of these compounds is evident in the fact that a 20 per cent solution of lead mahogany soap (sulfonate) caused an average reduction of 540°F. in the ignition temperature. A similar solution of copper mahogany soap caused a reduction of 440°C. It was found that the addition of a chlorinated organic compound caused a further increase in efficiency. Thus a mixture of copper mahogany soap and paradichlorobenzene caused an ignition temperature decrease of 554°F.

Although 20 per cent solutions were used in the examples, it is pointed out that satisfactory results may be obtained by using from 0.5 to 30 per cent of the compounds. When fuel oil containing a soot remover is used continously a smaller proportion may be used as a soot preventer, but when the remover is added only periodically, larger proportions are needed to do a good cleaning job. It is remarked that although lead derivatives give better results, the advantage is somewhat offset by the toxic nature of the compound; extra precautions being necessary.

In addition to the compounds cited above, other oil-soluble organometallic materials may be used. These include the metallic derivatives of alcohols, amines, ketones and esters and are added directly to the fuel oil.

All-in-all it may be said that when an effective soot remover is used under the proper conditions it will help to keep the heater working better with less labor, aid in securing more heat from the fuel burned, and reduce fuel waste. However, it does not eliminate the need for thorough periodic mechanical cleaning of the furnace, flues and chimney.

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"Oxford" Metal Polish

A marine metal polish designed to withstand the effects of salt air was introduced recently for household use by Crowell Chemical Co., East Rutherford, N. J. At the same time the firm announced that franchised distributorships are being established in the United States to introduce a line of polishes, degreasers, disinfectants, bilge solvents and sprays. The metal polish has been sold under the trade name of "Oxford" for a number of years on the eastern and western seaboards, in South America, China, Australia and India. Recently, hotels, oil marketers, steamship lines and railroads have been using the product.

PEA Hears Talk on Ants

Dr. William S. Creighton of the Department of Biology of the City College of New York and an authority on ants, was the guest speaker at the monthly meeting of the Professional Exterminators Association of New York, held Jan. 10 at the Hotel McAlpin. Dr. Creighton discussed the life habits of ants. His book "Ants of North America" is now being published and will be issued shortly.

Baking Sanitation Schools

The American Institute of Baking has announced five schools of instruction dealing with bakery sanitation, to be held during 1949. First of these will be in Chicago in February, followed by others at Baltimore, in June; Denver, in September; Cincinnati, in October; and Los Angeles in December. Dr. Edward L. Holmes, director of the Institute's sanitation department, will be in charge, assisted by three members of his staff, Lloyd J. Salathe, Louis A. King, and Don A. Spencer, and by Wm. Walmsley, principal of the Institute's School of Baking.

Last of the Institute's series of sanitation schools for 1949 is scheduled for San Francisco, Dec. 6 to 10. Since its launching in 1945, Dr. Holmes said, this program has made very favorable progress in awaking the baking industry to the importance of all phases of sanitary maintenance in baking plants.

Youthful Rat Controller

For his achievement in ridding his home town of rats, James A. Pritchett, 16, of Stone Mountain, Ga., was accorded considerable prominence at the recent National 4-H Club Congress in Chicago. After hearing customers in his father's grocery store repeatedly complain of the rats which swarmed all over town, he decided to do something about it. Presenting the situation to members of his Glen Haven 4-H Club, a town-wide rat extermination campaign was decided upon. A later tally of the rat tails brought in for credit showed over 500 dead rats and a few mice. Now Jimmy is planning a bigger and better drive this spring and hopes the local business men will make it more worth while by donating some nice prizes.

Sodium Fluoride Color Rule

The U. S. Department of Agriculture recently ruled that sodium fluoride need not be colored as an economic poison if it is intended for use as a fungicide solely in the manufacture of rubber, glue or leather goods. The ruling was made in connection with an interpretation of the 1947 Federal Insecticide, Fungicide and Rodenticide Act.

Pennsalt Forms New Unit

The organization of Pennsalt International Corp. to take over the varied foreign interests of Pennsylvania Salt Manufacturing Co., Philadelphia, was announced recently. Richard L. Davies, formerly assistant to the president of the parent company, is president of the new subsidiary. Vice-president is John H. A. Barr, export manager since 1944 of Pennsylvania Salt Manufacturing Co.

Pacific Chem. Show Dates

The second Pacific Chemical Exposition, sponsored by the California Section of the American Chemical Society, will be held Nov. 1-5, 1949 at the San Francisco Auditorium. As in 1947, the Pacific Industrial Conference will run concurrently with the Exposition, featuring one and two-day conferences of the 12 cooperating national and local societies and associations.

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TRADE NEWS

Acquires Micronizer Co.

Plant and manufacturing facilities of Micronizer Co., Moorestown, N. J., producers of "micronized" insecticides and fungicides, were purchased recently by Pittsburgh Plate Glass Co., Pittsburgh. The newly acquired firm will be operated as the Micronized Products Division of Pittsburgh's Corona Chemical Division. As part of its plan to expand "Corona" insecticides, further equipment will be installed at Moorestown for the manufacture of a full line of insecticide and fungicide dusts.

Micronizer Co. will continue in business as a licensing organization under their patents on the micronizing process and equipment. The trade mark, "Micronized," as applied to insecticides and fungicides has been assigned to Pittsburgh Plate Glass Co.

Name Goldberg as Rep.

The appointment of Melvin Goldberg of Pesticide Advisory Service, New York, as its eastern representative in the sale of the company's line of insecticide products, was announced recently by McLaughlin Gormley King Co., Minneapolis. Mr. Goldberg's firm has also been appointed as technical sales representative in the sanitation and industrial chemical manufacturing industries in the state of New York and upper New Jersey.

Harris Opens New Plant

T. F. Harris Manufacturing Co., Baltimore, producers of roach powders and other insecticides, recently established a plant at 624 E. Broadway, North Little Rock, Ark.

Hollingshead Names Hahne

Oliver A. Hahne, formerly sales manager for the household specialties department of Socony-Vacuum Oil Co. in Chicago, was recently appointed director of industrial sales for R. M. Hollingshead Corp., Camden, N. J. He succeeds J. F. Jamison. In his new post, Mr. Hahne, who was connected with

OLIVER A. HAHNE

Socony for 15 years, will be responsible for the expansion, development and sales of Hollingshead's "Whiz" line of industrial maintenance chemicals. The "Sanilac" brand of maintenance products and insect sprays and several well known Socony insect sprays and chemical specialties were developed under Mr. Hahne's guidance. Mr. Hahne will make his headquarters in Camden.

Universal Names Gilliard

L. E. Gilliard was recently appointed a representative for Universal Metal Products Co., Saranac, Mich., manufacturers of sprayers and dusters. Mr. Gilliard, who makes his headquarters in New York, will cover Pennsylvania, New Jersey, Delaware, Maryland and Washington, D. C.

Philip Haller Dies

Philip Haller, Sr., 85, head of Virus, Ltd., New York, exterminating firm for over 30 years before his retirement, died recently. He was one of the oldest members of the National Pest Control Association. On his retirement from active duty with Virus, Ltd., he was succeeded as head of the firm by a nephew.

"Toxaphene" Generic Term

Hercules Powder Co., Wilmington, Del., has agreed to relinquish its trade name, "Toxaphene" for the insecticidal chemical referred to as chlorinated camphene having a chlorine content of 67 to 69 percent, according to a recent announcement. The word now becomes a generic term to apply to the technical insecticidal chemical produced and meeting the standard prescribed. Announcement of this action was made by S. A. Rohwer, assistant chief, Bureau of Entomology and Plant Quarantine, U.S.D.A., Washington, D. C.

DDT Treated Cabinets

A new line of wardrobes, chests and closets featuring a five percent DDT coating for interior surfaces was announced recently by E-Z Do Co., New York. In addition to being sprayed with DDT, the inside surfaces are given a treatment designed to prevent mildewing.

Nelson is Reelected

Franklin C. Nelson of Standard Oil Co. of New Jersey, Bayway, was recently reelected chairman of the Industrial Advisory Council of the Thomas J. Headlee Research Fellowship in Entomology. The election took place at the Council's third annual meeting held at Rutgers University. The fellowship is dedicated to the advancement of fundamental research in entomology.

At the meeting, the first holder of the fellowship, John P. Reed, who resigned last February to accept a full time position in the state university organization, and his successor, Andrew J. Forgash, reported to the Council on progress made since the 1947 meeting. The problem they studied is the exploration of the possible effects of an enzyme, glutathione, on the activity of insecticidal materials in the body of an insect.

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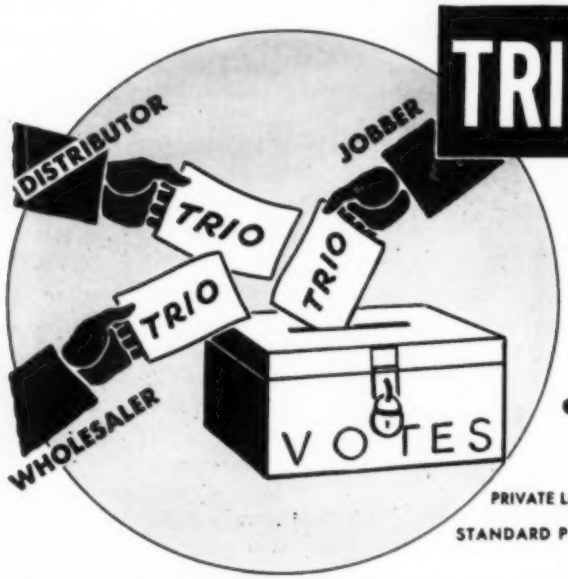

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Nelsons in Snow Rescue

Henry A. Nelson, formerly president of the Chemical Supply Co.,

HENRY A. NELSON

Cleveland, who recently sold out his interest to Hydro Chemical Co., with Mrs. Nelson, was rescued from his blizzard-bound automobile near Lordsburg, New Mexico, on January 16 by the crew of a railroad relief train. After having been snowbound in their car on U. S. Highway 80 in the New Mexican blizzard for 24 hours, along with 300 other stranded motorists, the train crew led them across fields to Lordsburg where a total of 1600 persons were quartered in schools, churches and other public buildings. After a delay of several days due to the snow-clogged roads, the Nelsons, en route to a two-month stay on the Coast, continued to Los Angeles.

Chem. Exposition Dates

The 22nd Exposition of Chemical Industries will be held at Grand Central Palace, New York, Nov. 28 through Dec. 3, 1949.

Buy Chemical Supply Co.

Chemical Supply Co., Cleveland, O., fifty-year old manufacturer of sanitation chemical specialties and allied products, has been purchased by the Hydro Chemical Co., also of Cleveland, according to an announcement by Harvey Smith, president of Hydro. Mr. Smith stated that the Chemical Supply Co. will continue to operate as a separate entity and supply the jobbing trade with its regular line of disinfectants, cleaners, roofing cements, and allied specialties. New address of the company is 3540 Norton Road, Cleveland.

Dow Names Grant in N. Y.

Leo B. Grant, who was associated with the company's magnesium division in Midland, Mich., for 20 years before joining the executive staff of the New York office of Dow Chemical Co., has been named manager of that office. He succeeds Ralph E. Dorland, who was manager of the New York office from 1919 until his death last May.

Mosquito Control Meeting

The American Mosquito Control Association and the California Mosquito Control Association held a joint annual meeting at Oakland and Berkeley, Calif., Feb. 6-9.

New Low-Cost Sprayer

Burgess Battery Co., Lake Zurich, Ill., has announced a new low-priced electric sprayer without motor or compressor. The new sprayer, termed the "vibro-sprayer" by the Burgess Handicraft Division, weighs 2½ lbs., equipped with plastic housing, 25 oz. glass jar container, eight foot cord and operates on 110-125 volts, 50-60 cycle A.C. It is recommended by the manufacturer for use in spraying liquid insecticides, floor waxes, disinfectants, deodorants, paints and lacquers by use of varying nozzle discs supplied with the sprayer.

The New Burgess Sprayer

Klein Joins Van Dyk

Samuel Klein, formerly perfumer with Synfleur Scientific Lab-

SAMUEL KLEIN

oratories, Inc., New York, recently joined the technical staff of Van Dyk & Co., Belleville, N. J., manufacturers of aromatic chemicals and perfuming raw materials. Mr. Klein will be in charge of the firm's newly formed division of aromatic products research and development.

"Old English" is 60

Plans for the celebration of the 60th anniversary of "Old English" floor wax, made by Boyle-Midway, Inc., New York, a division of American Home Products Corp., include changes in product formulation and redesigned labels. "Old English" waxes were originally manufactured by A. S. Boyle Co. of Cincinnati. During the middle thirties, the Boyle interests were acquired by American Home Products Corp., and later made part of the household products division of the corporation.

Lists Sanitation Films

A classified list of Communicable Disease Center filmstrips and motion pictures dealing with insect control, sanitation and sanitary engineering, tropical diseases and infectious diseases and entomological aspects was issued recently by the Public Health Service of the Federal Security Agency. Atlanta 3, Ga. The films are available upon request on a 30 day free loan to schools of sanitary engineering and others.

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NAIDM Plans Expansion and Change in Name

ACCORDING to an announcement from H. W. Hamilton, secretary of the National Association of Insecticide & Disinfectant Manufacturers, the association is considering a plan of reorganization and expansion including a possible change in its name. The plan worked out by the executive committee of NAIDM, headed by Leonard Oppenheimer of West Disinfecting Co., Long Island City, N. Y., and previously discussed by the Board of Governors, calls for a broadening of the activities of the Association and the formation of five separate divisions each with its own elected chairman. These divisions would include (1) insecticides, (2) disinfectants and deodorants, (3) floor waxes and floor finishes, (4) soaps, detergents and sanitary specialties, (5) aerosol products. The activities of the last three divisions named will include most of the expansion.

Based on an outline of the plan by Secretary Hamilton, a new constitution and by-laws has been drawn up by the Association General Counsel, John D. Conner for submission to the membership. In addition to an elected chairman for each division who automatically would become a member of the Board of Governors, four board members would be elected at large and these nine with the officers would constitute the full board. Each division would have its own administrative committee and appoint or choose its own individual committee members. Separate activities by any division could be undertaken and funds for the purpose collected within the division and used, subject to approval by the Board of Governors. Separate meetings for each division, and separate programs, could be arranged in connection with regular meetings of the Association or at other times as desired.

Many names have been considered and discussed by the Executive Committee in submitting its

MELVIN FULD

plan. The one which appeared to have found most favor in the committee is "Chemical Specialty Manufacturers Association, Inc." Others discussed included "Sanitary Chemical Manufacturers Association," "National Chemical Specialty Association," "Sanitary Chemical Associates," "Cleaner and Sanitation Associates," "Detergent and Specialty Manufacturers," and others.

PRESIDENT Gordon M. Baird, Baird & McGuire, Inc., Holbrook, Mass., in discussing the new reorganization plan stated that it had in mind not only attracting other manufacturers to membership in NAIDM, but also giving the present membership of some 250 firms a better representation in the products and problems of their businesses. He pointed out that at least one-third of the present membership are manufacturers of some soap or detergent products, and that the same applied to floor waxes and other floor treatment specialties. "Not only is the plan to give a wider range of activities to attract new members," said Mr. Baird, "but to give our present membership a broader trade association service to cover more of their problems and the products which they manufacture. The character and scope of members' business has changed a great deal since NAIDM was founded back in 1914, and we plan to meet and keep pace with this progress."

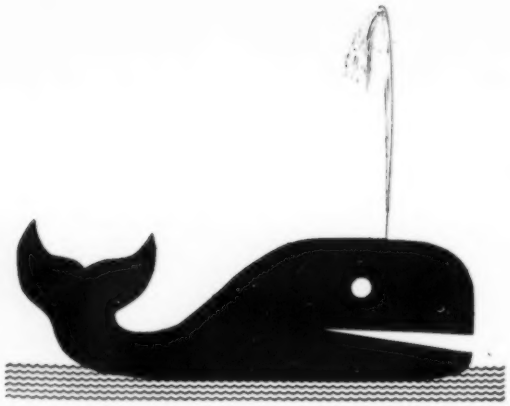
NAIDM Programs for 1949

Melvin Fuld of Fuld Brothers, Baltimore, has been appointed chairman of the 1949 Program Committee for the National Association of Insecticide & Disinfectant Manufacturers which will hold two meetings this year, one in Chicago on June 13 and 14, and the annual meeting in Washington, D. C., on December 5 and 6. In announcing the appointment, G. M. Baird of Baird & McGuire, Inc., Holbrook, Mass., president of the NAIDM, stated that he had asked the following to serve with Mr. Fuld for the June meeting in Chicago: Al Candy of Candy & Co.; W. J. Zick of B. Heller & Co., both of Chicago; Jack Varley of James Varley & Sons, St. Louis.

While early plans indicate some consideration of salesman training and merchandising programs, according to Mr. Fuld, he has requested specific suggestions from the NAIDM membership for subjects and problems which should appear on the program of the June meeting. In view of the proposed expansion and sectionalizing of NAIDM activities, he believes that the June program should cover a broader scope of membership activities. The Chicago meeting will be at the Drake Hotel, June 13 and 14.

Reilly NAIDM Treasurer

Peter C. Reilly, Jr., vice-president of the Reilly Tar & Chemical Corp., Indianapolis, and eastern manager for the company with offices at Tuckahoe, N. Y., was chosen treasurer of the National Association of Insecticide & Disinfectant Manufacturers, New York, by the Board of Governors to succeed John Powell who had held the office for 18 years. Mr. Powell resigned January 15, following the sale of his interest in John Powell & Co., New York, to enter the publishing field with a new monthly



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magazine, *Modern Sanitation*.

Mr. Reilly was born in Indianapolis and attended high school in that city. He was graduated from

PETER C. REILLY, JR.

the University of Colorado in 1929 and from the Harvard Business School in 1931. He then joined the staff of the Republic Creosoting Co. in Indianapolis and after that company had taken over the International Combustion Tar & Chemical Corp., he was transferred to the New York office of this latter corporation whose name was changed in 1933 to the Reilly Tar & Chemical Corp. In 1935, he became a vice-president and eastern manager for Reilly Tar. He is also a vice-president of Republic Creosoting, the parent company. He has been active in NAIDM for a number of years and also in other associations of the chemical industry.

AIFA Changes Name

Changes in name and location of headquarters have been decided upon recently by the Agricultural Insecticide & Fungicide Association, New York. The new name of the association is to be National Agricultural Chemicals Association. New headquarters have been opened at 910 17th St., N.W., Washington 6, D. C.

New Dow Phenol Plant

Dow Chemical Co., Midland, Mich., recently announced completion of new facilities expanding its phenol capacity by 30 million pounds per year. The new plant is now in production.

Robinson Brothers Changes

Purchase of a substantial interest in Robinson Brothers Buffalo Ammonia, Inc., Brooklyn, by Chas. L. Huisking & Co., New York, which firm will take over active management, was announced recently. At the same time, it was announced that the name of the firm would be changed to Robinson Brothers Chemicals, Inc. The modern facilities of the company have been expanded by the addition of a new building and the installation of railroad siding.

Chas. L. Huisking & Co. are represented on the board of directors by William W. Huisking, vice-president; Richard V. Huisking, secretary, and K. A. Koehler, treasurer.

Robinson Brothers Chemicals, Inc., produce and distribute industrial fine chemicals and "Buffalo" brand ammonia and other household products. Under the new management household products will be marketed by the Buffalo Ammonia Division of Robinson Brothers Chemicals, Inc.

Koppers Advances Macon

J. C. Macon, assistant sales manager of the Tar Products Division, Koppers Co., Pittsburgh, since Sept., 1947, was recently named sales manager of the division. He succeeds R. R. Holmes, who was recently named as assistant general manager of the division.

John N. Fencil has been appointed eastern district sales manager for the Tar Products Division, after having been eastern district building materials sales manager for the division since 1946.

Mr. Macon has been with Koppers since 1935, his first assignment with the firm, following his training period, was with the Tar Products Division district office at Birmingham, Ala. In Nov., 1941, he returned to Pittsburgh to work in the division's creosote oil sales department, but was later assigned to Birmingham in 1943 as assistant district manager. In Aug., 1946 he was appointed sales manager of the Tar Department with headquarters in Pittsburgh, and in Sept., 1947, he became assistant sales manager of the Tar Products Division.

Private Brands Expands

Private Brands, Inc., recently leased a four-story and basement building, containing 42,000 square feet of floor space, at Third and Pacific Sts., Kansas City, Mo., for the manufacture and distribution of the firm.

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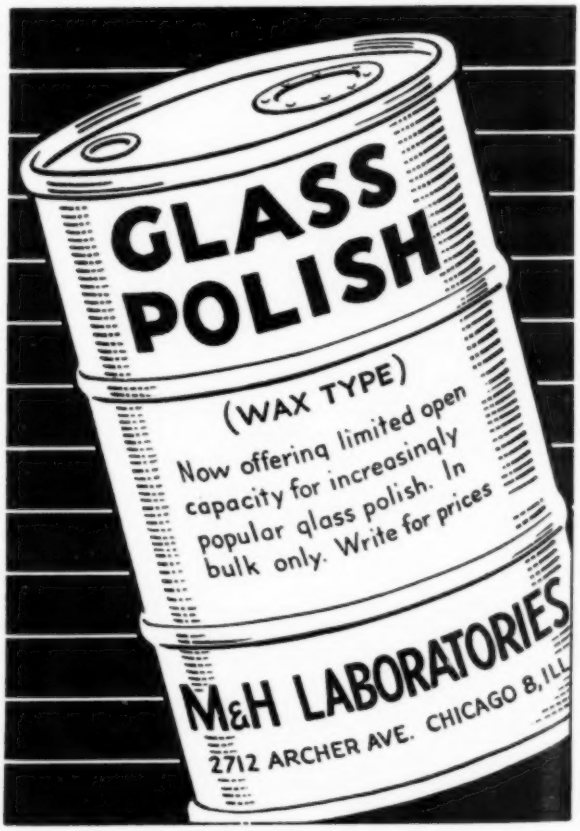
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Jaffin in Penick Post

Joseph M. Jaffin was recently appointed assistant manager of the

JOSEPH M. JAFFIN

essential oils division of S. B. Penick & Co., New York. He has been associated with production and management in the cosmetic field for over 20 years.

Patton to Winthrop-Stearns

L. R. Patton, Jr., was recently named sales representative in the Buffalo area for the combined special markets and industrial division of Winthrop-Stearns, Inc., New York. Formerly chief chemist of Texas Star Mills, Galveston, Mr. Patton is a veteran of World War II and served with the Air Corps in Italy. He will make his headquarters at the company's Buffalo office, 1102 Rand Building.

R & H Stock is Sold

Two blocks of stock of Rohm & Haas Co., Philadelphia, were awarded during January to two investment banking companies by the Office of Alien Property Custodian. The stock comes from the estate of Dr. Otto Rohm of Darmstadt, Germany, one of the company's founders. The stock will be resold.

New Berje Dept.

Berje Products Co., New York, recently announced the formation of a new division to be known as the International Department. The new department will be headed by Wm. A. Hoffman, former president of Courtier Parfums, Inc., New York. He also had been previously associated with Aromicals, Inc., New York, as head of the technical and production division. He will supervise the importation of essential oils and specialties from Austria and Italy and will be in charge of sales of the department.

Reilly Tar Moves Offices

The eastern district sales office of Reilly Tar & Chemical Corp, New York, was recently moved from Newark, N. J. to First National Bank Building, Tuckahoe, N. Y.

Boyle-Midway Deodorizer

"Metazene," a new chemical deodorizer recently announced by Dr. Lowell B. Kilgore of Kilgore Chemicals, Inc., Washington, D. C., has been purchased for retail distribution by Boyle-Midway, Inc., a division of American Home Products Corp., New York. The new chemical is being packaged under the brand name "Silver Label Spray Deodorizer." It is available in a 12-ounce, "push-button" aerosol container for $.69. "Metazene," according to the company announcement, is a high-molecular synthetic organic liquid which reacts with sulfur and nitrogen compounds —the cause of most common odors. "Metazene" is said to neutralize odors, rather than to mask them.

Meeks Join Fleuroma

Fleuroma, Inc., New York, recently announced the appointment

WILLIAM F. MEEKS

of William F. Meeks as salesman in the New York metropolitan district and the states of New Jersey, New York and Pennsylvania for its full line of perfume materials, bases, specialties and aromatic chemicals.

Following four years of army service in the Southwest Pacific area, Mr. Meeks was with Magnus, Mabee & Reynard and the essential oil department of S. B. Penick & Co., before joining Fleuroma. He is a graduate of New York University.

"Glass Wax" Suits Filed

Gold Seal Co., Bismarck, S. D., distributor of "Glass Wax", filed suit in Chicago recently against three competitive firms for alleged infringement on Gold Seal's registered trade mark, "Glass Wax" and also for alleged imitation of the Gold Seal "Glass Wax" package. Last summer Gold Seal Co. sued BrilYant Products Corp. of Chicago on similar grounds. The companies sued by Gold Seal Co. are Boyle-Midway, Inc., New York, Peacock Cleaners and Dyers, Victory Merchandisers, Inc. and Glass Wax Corp., all of Chicago. Gold Seal Co., which distributes the product made by R. M. Hollingshead Co., Camden, N. J., asks an injunction to prevent the companies from using the words "glass wax", from packaging their cleaners in cans and also asks for an accounting of profits gained through sale of competitive items described as glass wax.

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Sells Janitor Supply Div.

The Sanitary Products and Paper Co., a department of Crown Zellerbach Corp., San Francisco, which distributes products of its Carthage, N. Y., mill and those of other manufacturers recently announced the sale of its five branches to individual business groups in New York. The Sanitary Products and Paper Co. specialized in the janitorial supply field.

The Syracuse branch was purchased by W. C. Swan, former branch manager, and seven employees; the Brooklyn Branch was sold to A. L. Scharf, former manager of the Sanitary Products Department; the Philadelphia branch was bought by C. L. Ward Co.; the Pittsburgh branch was sold to Morris Paper Co. and the Buffalo branch to Hubbs & Howe Co.

ANA Appoints Connolly

U. N. Connolly of S. C. Johnson & Son, Racine, Wis., has just been named chairman of a newly formed radio committee by the Association of National Advertisers.

New D&O Branches

Dodge & Olcott, Inc., New York, recently announced the opening of branch offices in Atlanta, Dallas and Cincinnati. The following managers named for the branches are, respectively: Earl W. Kersten, William A. Kissel and Thomas F. Callahan.

PCO Meetings, Courses

The National Pest Control Association, Brooklyn, recently announced the following meetings of regional groups: Southern PCO Conference, Louisiana State University, Jan. 27-29; Eastern PCO Conference, University of Massachusetts, Amherst, Mass., Jan. 31-Feb. 1; Pacific Coast PCO Conference, University of California, Berkeley, sessions held at Pacific Hotel, San Francisco, in conjunction with annual meeting of Pest Control Operators of California, Inc., Jan. 31, Feb. 1 and 2; Purdue PCO Conference, Purdue University, Lafayette, Ind., Feb. 7-11; Canadian PCO Conference, University of Montreal, Can., Feb. 14-16.

Future PCO short courses are being held by the Virginia State Pest Control Association at Virginia Polytechnic Institute, Blacksburgh, Va., Mar. 8 and 9; Wisconsin Pest Control Association at the University of Wisconsin, Madison, Mar. 28-30; Pennsylvania Pest Control Operators, at Pennsylvania State College, State College, Pa., Apr. 14-16.

PCO Plans for 1949

A three-point program of expanding activities of the National Pest Control Association was announced recently. During the coming year the association plans to set up national headquarters in New York City; establish a technical department with a director to handle technical matters and phases of public relations; provide a more adequate allowance to cover travelling expenses of the president, so that he will be able to do more travelling and increase the amount of money available for more committee activities.

New Room Deodorant

"Vamoose," a new room deodorant, was presented to Chicagoans recently in a full-page newspaper advertisement which opened a $200,000 promotional campaign for the product. Particular attention was given the container, manufactured by Continental Can Co., New York. The propellant is released by pressing a button. Vamoose Products, Inc., distributors, announced that the campaign will be continued in newspapers and that radio will also be used.

Orkin Sales Meeting

A three-day sales meeting, attended by about 125 of the firm's personnel, was held recently by Orkin Exterminating Co., Atlanta, Ga. Problems relating to administration, sales and collections, service operations, safety, termites, powder post beetles and wood-rotting fungi were discussed.

Powell Co. Changes

As part of its expansion plans, John Powell & Co., New York, recently announced a new technical service department. Kenneth Nash has been appointed director.

The closing of the firm's San Leandro, Calif., plant and the moving of the Powell laboratory from New York to the Brooklyn plant have also been effected as part of the program. Another change involves the transferring of the St. Louis office to Fort Worth, Tex.

Miss Elizabeth Smith has been appointed assistant secretary.

Burke Bocon V. P.

Frank G. Burke, formerly president of Electronic Control Corp., was recently appointed vice-president of Bocon Chemical Corp., New York.

"Dowicide G," water soluble sodium pentachlorophenate germicide and fungimade by Dow Chemical Co., Midland, Mich., is now available in hard pellet form. The change from flake to pellet form was made to control the dust and facilitate handling the salt during its application. The small cylindrical pellets are compressed one-fourth the volume of the original flake. The new pellets are packed in 200-pound "Leverpak" fibre drums and will be marked "pellets."

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